

FCC Test Report

Report No: WD-RF-R-240107-A0

Product Name : Wireless Streaming Station
Model Name / Trade : CT1820 / CENTRON
Series Model Name / Trade : A10 / AVA
i3ALLSYNC TOUCH RX46 / i3-TECHNOLOGY
FCC ID : 2AP48CT1820
Applicant : Centron Design Co., Ltd.
Received Date : Nov. 09, 2023
Tested Date : Mar. 08, 2024 ~ Apr. 03, 2024
Applicable Standard : 47 CFR FCC Part 15, Subpart C (Section 15.247)
KDB 558074 D01 DTS Meas. Guidance v05
ANSI C63.10 : 2013



Wendell Industrial Co., Ltd
Wendell EMC & RF Laboratory

Caution:

This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted.

The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment.

Please note that the measurement uncertainty are provided for informational purpose only and are not used in determining the Pass/Fail results.

This report must not be used to claim product endorsement by TAF or any agency of the government.

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Test Report

Issued Date: April 08, 2024

Project No.: 23Q110701

Product Name	Wireless Streaming Station
Model Name / Trade	CT1820 / CENTRON 
Series Model Name / Trade	A10 / AVA  i3ALLSYNC TOUCH RX46 / i3-TECHNOLOGY
FCC ID	2AP48CT1820
Applicant	Centron Design Co., Ltd.
Manufacturer	Centron Design Co., Ltd.
EUT Rated Voltage	AC 100 – 240V ~ 50 / 60Hz 0.6A Max
EUT Test Voltage	AC 120V / 60Hz
EUT Supports Radios Application	WLAN 802.11a/b/g WLAN 802.11n (HT20/HT40) WLAN 802.11ac(VHT20/40/80) and ax(HE20/40/80)
Applicable Standard	47 CFR FCC Part 15, Subpart C (Section 15.247) KDB 558074 D01 DTS Meas. Guidance v05 ANSI C63.10 : 2013
Output Power	27.45 dBm
Test Result	Complied

Documented :



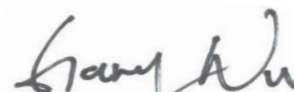
(Specialist / Emma Lu)

Technical Engineer :



(Section Manager / Jack Chang)

Approved :



(Project Manager / Gary Wu)

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Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs

Document Revision History

Report No.	Issue date	Description
WD-RF-R-240107-A0	April 08, 2024	Initial report

Summary of Test Result

Ref. Std. Clause	Test Items	Result
15.203 15.247(C)	Antenna Requirement	Pass
15.247(b)	Peak Output Power	Pass
15.247(a)(2)	6dB Bandwidth	Pass
15.247(e)	Power Spectral Density	Pass
15.247(d)	Conducted Band Edges and Conducted Spurious Emission	Pass
15.247(d)	Radiated Band Edges and Radiated Spurious Emission	Pass
15.207	AC Conducted Emission	Pass

1 Generation Information

1.1 Applicant

Centron Design Co., Ltd.
2F-3, No. 15, Ln 360, Sec. 1, Neihu Rd., Neihu Dist., Taipei City 114, Taiwan

1.2 Manufacturer

Centron Design Co., Ltd.
2F-3, No. 15, Ln 360, Sec. 1, Neihu Rd., Neihu Dist., Taipei City 114, Taiwan

1.3 Description of Equipment under Test

Product Name	Wireless Streaming Station
Model Name / Trade	CT1820 / CENTRON
Series Model Name / Trade	A10 / AVA i3ALLSYNC TOUCH RX46 / i3-TECHNOLOGY
Model Difference	1. Market Segmentation. 2. The casing color is different : (1) CT1820 / CENTRON : Black casing. (2) A10 / AVA : White casing. (3) i3-TECHNOLOGY / i3ALLSYNC TOUCH RX46 : Black casing.
FCC ID	2AP48CT1820
Frequency Range	802.11b/g/n-HT20/ax-HE20: 2412~2462MHz
Number of Channels	802.11b/g/n-HT20/ax-HE20: 11
Data Rate	802.11b : 1M - 11Mbps 802.11g : 6M - 54Mbps 802.11n : up to 144.4Mbps 802.11ax : up to 286.8Mbps
Channel separation	802.11b/g/n/ax: 5 MHz
Type of Modulation	802.11b:DSSS (DBPSK, DQPSK, CCK) 802.11g/n:OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ax: OFDMA
Antenna Information	Refer to the table "Antenna List"
EUT Supports Radios Application	WLAN 802.11a/b/g WLAN 802.11n (HT20/HT40) WLAN 802.11ac(VHT20/40/80) and ax(HE20/40/80)
EUT Rated Voltage	AC 100 – 240V ~ 50 / 60Hz 0.6A Max
EUT Test Voltage	AC 120V / 60Hz

The EUT uses following adapter.

Trade Name	SHENZHEN FUJIA APPLIANCE CO., LTD.
Model No.	FJ-SW1202000N
Input Power	AC 100 – 240V ~ 50 / 60Hz 0.6A Max
Output Power	DC 12.0V / 2.0A, 24.0W
Power Line	Non-shielded, Non-Core, 1m

Antenna List

No.	Manufacturer	Model No.	Antenna Type	Peak Gain
1	SHENZHEN ZCONN PRECISION ELECTRONIC CO.,LTD	2901-01110003506	FPC Antenna	2.87 dBi for 2.4GHz
2	SHENZHEN ZCONN PRECISION ELECTRONIC CO.,LTD	2901-01110003506	FPC Antenna	2.87 dBi for 2.4GHz

Remark: The antenna of EUT is conforming to FCC 15.203

Channel List

802.11b/g/n-HT20/ax-HE20			
Channel	Frequency(MHz)	Channel	Frequency(MHz)
01	2412	07	2442
02	2417	08	2447
03	2422	09	2452
04	2427	10	2457
05	2432	11	2462
06	2437	--	--

Test Frequencies in each operating band

Frequency range over which the device operates in each operating band (Note 1)	Number of test frequencies required	Location of test frequencies inside the operating frequency range (Note 1,2)
≤ 1 MHz	1	near center
> 1 MHz and ≤ 10 MHz	2	1 near high end, 1 near low end
> 10 MHz	3	1 near high end, 1 near center, and 1 near low end

Note 1: The frequency range over which the device operates in a given operating band is the difference between the highest and lowest frequencies on which the device can be tuned within that given operating band. The frequency range can be smaller than or equal to the operating band, but cannot be greater than the operating band.

Note 2: In the third column of table 1, “near” means as close as possible to or at the center / low end / high end of the frequency range over which the device operates.

Firmware / Software Version

1	Product Name	Wireless Streaming Station
2	Model No.	CT1820 / CENTRON
3	Test SW Version	Putty 0.63.0.0
4	RF power setting in TEST SW	☐ RF power setting was not able to alter during testing. ☒ RF power setting was able to alter during testing. (See the following table)

Parameters of test software setting

Type of Modulation	Channel	Frequency (MHz)	Chain A	Chain B
802.11b	01	2412	18	--
	06	2437	18	--
	11	2462	18	--
802.11g	01	2412	15	15
	06	2437	18	18
	11	2462	14	14
802.11n HT20	01	2412	12	12
	06	2437	13	13
	11	2462	11	11
802.11ax HE20	01	2412	12	12
	06	2437	14	14
	11	2462	11	11

1.4 Test Mode Applicability And Tested Channel Detail

1. This device is a Wireless Streaming Station with a built-in Wi-Fi transceiver.
2. These tests were performed on a sample of equipment to demonstrate compliance with 47 CFR FCC Part 15, Subpart C (Section 15.247).
3. Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports.
4. The worst case was found when positioned on X axis for radiated emission. Following test modes were selected for the final test, and the final worst case is recorded in the report:

EUT Configure Mode	RE < 1G	RE ≥ 1G	ACM	ACP	Description
--	☒	☒	☒	☒	Transmit WIFI

Note : RE<1G: Radiated Emission below 1GHz RE≥1G: Radiated Emission above 1GHz
ACM: Antenna Port Conducted Measurement ACP: AC Power Line Conducted Emission

Following channel(s) was (were) selected for the final test as listed below:

Radiated Spurious Emission Measurement(Below 1GHz):

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Type	Data Rate (Mbps)
--	802.11ax HE20	1 ~ 11	06	OFDMA	14.6

Radiated Spurious Emission Measurement(Above 1GHz):

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Type	Data Rate (Mbps)
--	802.11b	1 ~ 11	01, 06, 11	DSSS	1
--	802.11g	1 ~ 11	01, 06, 11	OFDM	6
--	802.11n HT20	1 ~ 11	01, 06, 11	OFDM	13
--	802.11ax HE20	1 ~ 11	01, 06, 11	OFDMA	14.6

Radiated Band Edge Emission Measurement(Above 1GHz):

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Type	Data Rate (Mbps)
--	802.11b	1 ~ 11	01, 11	DSSS	1
--	802.11g	1 ~ 11	01, 11	OFDM	6
--	802.11n HT20	1 ~ 11	01, 11	OFDM	13
--	802.11ax HE20	1 ~ 11	01, 11	OFDMA	14.6

Peak Output Power, 6dB Bandwidth, Power Spectral Density, Conducted Spurious Emission:

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Type	Data Rate (Mbps)
--	802.11b	1 ~ 11	01, 06, 11	DSSS	1
--	802.11g	1 ~ 11	01, 06, 11	OFDM	6
--	802.11n HT20	1 ~ 11	01, 06, 11	OFDM	13
--	802.11ax HE20	1 ~ 11	01, 06, 11	OFDMA	14.6

Conducted Band Edges:

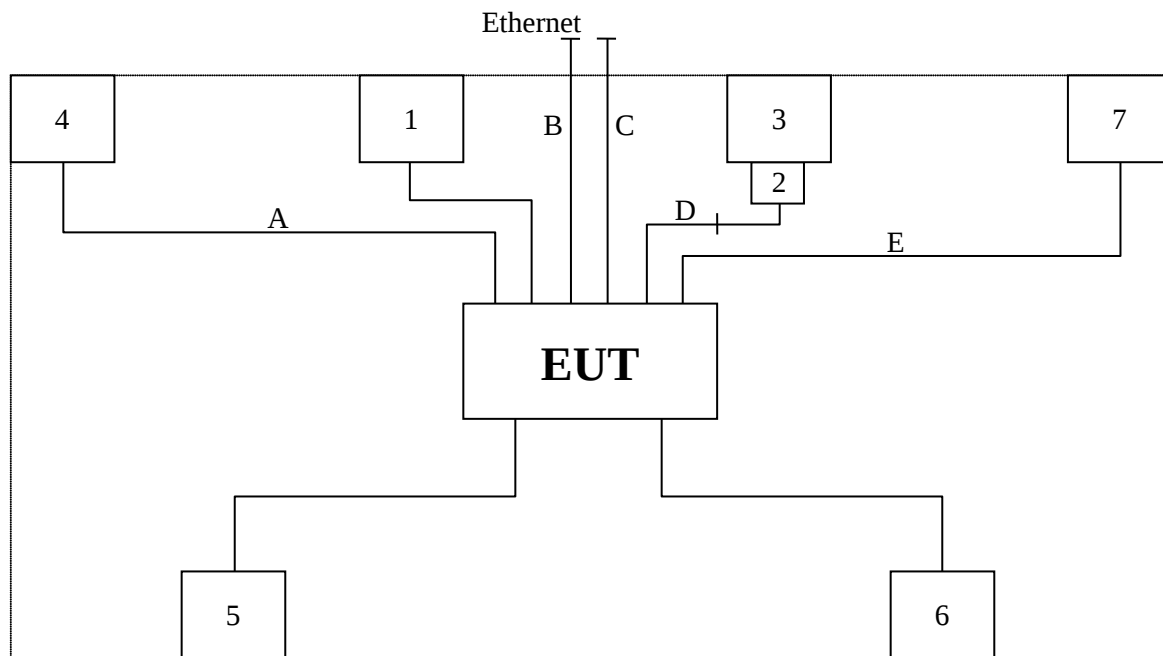
EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Type	Data Rate (Mbps)
--	802.11b	1 ~ 11	01, 11	DSSS	1
--	802.11g	1 ~ 11	01, 11	OFDM	6
--	802.11n HT20	1 ~ 11	01, 11	OFDM	13
--	802.11ax HE20	1 ~ 11	01, 11	OFDMA	14.6

AC Conducted Emission:

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Type	Data Rate (Mbps)
--	802.11ax HE20	1 ~ 11	06	OFDMA	14.6

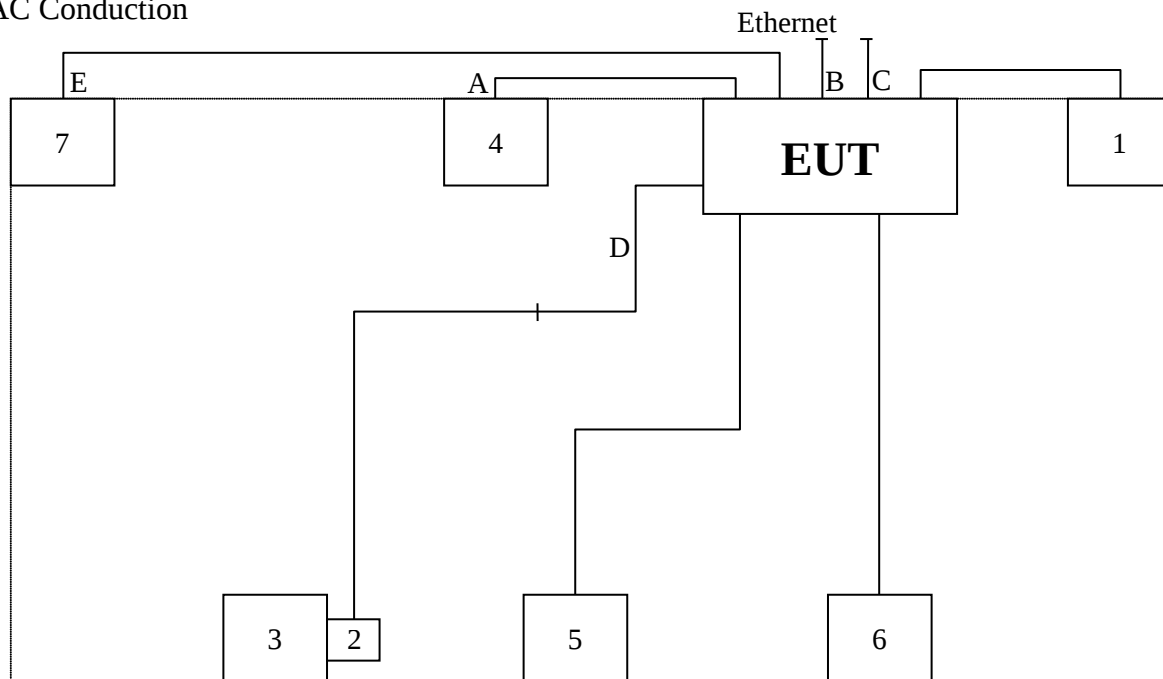
1.5 Configuration of Tested System

Radiation



Test Table

AC Conduction



Test Table

1.6 EUT Exercise Software

1. Setup the EUT as shown in Section 1.5
2. Execute software “Putty 0.63.0.0”.
3. Configure the test mode, the test channel, and the data rate.
4. Press “OK” to start the continuous transmit.
5. Verify that the EUT works properly.

1.7 Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

No.	Product	Manufacturer	Model No.	Serial No.	Power Cord
1	Adapter	SHENZHEN FUJIA APPLIANCE CO., LTD.	FJ-SW1202000N	N/A	Non-shielded, Non-Core, 1m
2	Fixture	WD	CH340	N/A	N/A
3	Notebook PC	acer	N16Q1	NXVF4TA023742254147600	N/A
4	Monitor	HP	HP 24f 4k Display	3CM01916T1	Non-shielded, 2 Core, 1.5m
5	USB Keyboard	Lemel	5105U	G6450015686	Non-shielded, Non-Core, 1.5m
6	USB Mouse	acer	MOJFUO	736826B4K700	Non-shielded, Non-Core, 1.5m
7	Personal Computer	DELL	D32M	N/A	N/A

No.	Signal Cable Type	Signal cable Description
A	HDMI Cable	Shielded, Non-Core, 1.5m
B	LAN Cable	Non-shielded, Non-Core, 12m
C	RS232 to 3.5mm Cable	Non-shielded, Non-Core, 1m
D	Data Cable	Non-shielded, Non-Core, 0.24m
E	HDMI Cable	Shielded, Non-Core, 1.5m

1.8 Test Facility

Items	Required (IEC 60068-1)
Temperature (°C)	15-35
Humidity (% RH)	25-75
Barometric pressure (mbar)	860-1060

Description: Accredited by TAF

Accredited Number: 2965

Issued by: Wendell Industrial Co., Ltd

Company Address: 6F/6F-1, No.188, Baoqiao Rd., Xindian Dist.,
New Taipei City 23145, Taiwan R.O.C

Test Lab: Wendell EMC & RF Laboratory

Lab Address: 5F-1, No.188, Baoqiao Rd., Xindian Dist.,
New Taipei City 23145, Taiwan R.O.C

Test Location: No. 119, Wugong 3rd Rd., Wugu Dist.,
New Taipei City 248, Taiwan (R.O.C.)

Designation Number: TW0025

Test Firm Registration Number: 665221

1.9 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence (level based on a coverage factor K=2)

Measurement Project	Condition	Expended Uncertainty
AC Conducted Emission	0.150 ~ 30 MHz	± 2.64 dB
Radiated Emission	0.009 ~ 30 MHz	± 3.7 dB
	30 ~ 1000 MHz	± 3.9 dB
	1000 ~ 18000 MHz	± 4.5 dB
	18000 ~ 40000 MHz	± 4.3 dB
RF Power, Conducted	Conducted Measuring	± 0.75 dB
Occupied Bandwidth	Conducted Measuring	± 2.4 %
Power Density	Conducted Measuring	± 1.2 dB
Duty Cycle and Dwell Time	Conducted Measuring	± 0.9 %
Conducted Unwanted Emission Strength	Conducted Measuring	± 1.4 dB
DC Power Supply	--	± 2.0 %
Temperature	--	± 0.55 °C
Humidity	--	± 3.1 %

Note: Please note that the measurement uncertainty are provided for informational purpose only and are not used in determining the Pass/Fail results.

1.10 List of Test Equipment

For Conducted measurements / W08-Conducted Measurement

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
✓	Spectrum analyzer	Keysight	N9010A	SG50420005	2023/08/08	2024/08/07
✓	Wideband Peak Power Meter	Anritsu	ML2495A	1733007	2023/09/07	2024/09/06
✓	Pulse Power Sensor + Precision Adaptor	Anritsu	MA2411B	1726022	2023/09/07	2024/09/06
	Temperature Chamber	TAICHY	MHK-225LK	1061121	2023/04/24	2024/04/23
	Wireless Connectivity Tester	R&S	CMW270	101307	2023/05/29	2024/05/28
✓	Attenuator	MVE	MVE2211-10	CT-9-056	2022/08/10	2024/08/09
	Attenuator	MVE	MVE2211-20	CT-9-057	2022/08/10	2024/08/09
	Attenuator	MVE	MVE2211-30	CT-9-058	2022/08/10	2024/08/09
	Power Divider	MVE	MVE8546	170826003	2022/08/10	2024/08/09
	Power Splitter	MVE	MVE8547	170302047	2022/08/11	2024/08/10
	DC Power Supply	GW INSTEK	GPC-3060D	GER817636	2023/08/11	2024/08/10

Remark:

1. The equipments are calibrated every one year.
2. The Attenuator/ Divider/ Splitter are calibrated every two year.
3. The test instruments marked with “✓” are used to measure the final test results.

For AC Conduction measurements / W08-CE

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
✓	EMI Test Receiver	R&S	ESR3	102309	2023/06/19	2024/06/18
✓	2-Line V-Network LISN	R&S	ENV216	101185	2023/06/16	2024/06/15
✓	LISN	SCHWARZBECK	NSLK 8127RC	05028	2023/06/16	2024/06/15
✓	Transient Limiter	EM Electronics Corporation	EM-7600	857	2023/06/17	2024/06/16
✓	50ohm Cable	EMCI	EMCCFD300-BM-BM- 5000	170612	2023/06/17	2024/06/16
✓	50 ohm terminal impedance	HUBER+SUHNER	50 ohm terminal impedance	CT-1-109-1	2023/06/16	2024/06/15

Remark:

1. All equipments are calibrated every one year.
2. The test instruments marked with “✓” are used to measure the final test results.
3. Test Software version: FARAD EZ-EMC Ver.EMC-CON 3A1

For Radiated measurements / W08-996-2

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
✓	EMI Receiver	Keysight	N9038A	MY51210173	2023/08/18	2024/08/17
✓	Spectrum Analyzer	Keysight	N9010A	MY52220228	2023/08/18	2024/08/17
✓	Active Loop Antenna	Schwarzbeck	FMZB 1513-60B	00033	2023/05/08	2024/05/07
✓	TRILOG super broad Antenna	Schwarzbeck	VULB 9168	VULB 9168-700 & 20E03	2023/07/31	2024/07/30
✓	Horn Antenna	Schwarzbeck	BBHA 9120D	01767	2023/08/17	2024/08/16
✓	Horn Antenna	Schwarzbeck	BBHA 9170	703	2023/08/21	2024/08/20
✓	Pre-Amplifier	EM	EMC330	060774	2023/08/22	2024/08/21
✓	Pre-Amplifier	EMEC	EM01G18G	060648	2023/08/22	2024/08/21
✓	Pre-Amplifier	JPT	JPA0118-55-303K	1910001800055003	2023/08/22	2024/08/21
✓	Pre-Amplifier	EMCI	EMC184045SE	980515	2023/08/22	2024/08/21
✓	Cable	EMEC	EM-CB400	105060103	2023/08/22	2024/08/21
✓	Cable	EMEC	EM-CB400	105060102	2023/08/22	2024/08/21
✓	Cable	EMEC	EM-CB400	105060101	2023/08/22	2024/08/21
✓	RF Cable	HUBER+SUHNER	SF102	MY2752/2	2023/08/22	2024/08/21
✓	RF Cable	MVE	280280.LL266.1200	B60028C	2023/08/22	2024/08/21
✓	RF Cable	EMCI	EMC102-KM-KM-600	190646	2023/08/22	2024/08/21
✓	RF Cable	MVE	140140.LL404.700	B90014C	2023/08/22	2024/08/21
✓	RF Cable	MVE	140140.LL404.300	B90006C	2023/08/22	2024/08/21
✓	RF Filter	EMEC	BRF-2400-2500	002	2022/08/17	2024/08/16
	RF Filter	EMEC	BRF-5150-5350	104	2022/08/17	2024/08/16
	RF Filter	EMEC	BRF-5470-5725	092	2022/08/17	2024/08/16
	RF Filter	EMEC	BRF-5725-5875	091	2022/08/17	2024/08/16
✓	RF Filter	EMEC	HPF-2800	002	2022/08/17	2024/08/16
	RF Filter	EMEC	HPF-5850	059	2022/08/17	2024/08/16
	SMA Notch Filter	MVE	MFN-902.928.S1	190604001	2022/08/17	2024/08/16

Remark:

1. The equipments are calibrated every one year.
2. The Filter calibrated every two year.
3. The test instruments marked with “✓” are used to measure the final test results.
4. Test Software version: FARAD EZ-EMC Ver.WD-03A1-1

2 Test Result

2.1 Antenna Requirement

2.1.1 Applicable Standard

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

An intentional radiator shall be designed to ensure that no antenna other than as furnished by the responsible party shall be used with the device. If transmitting antennas of directional gain greater than 6dBi are using the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi, for compliance to FCC 47CFR 15.247 (c) requirements.

2.1.2 Antenna Connected Construction

Non-standard antenna connector is used.

2.1.3 Antenna Gain

No.	Manufacturer	Model No.	Antenna Type	Peak Gain
1	SHENZHEN ZCONN PRECISION ELECTRONIC CO.,LTD	2901-01110003506	FPC Antenna	2.87 dBi for 2.4GHz
2	SHENZHEN ZCONN PRECISION ELECTRONIC CO.,LTD	2901-01110003506	FPC Antenna	2.87 dBi for 2.4GHz

Description of the operating transmit modes :

- * 802.11b : Only one Antenna mode, this port is Ant-1
- * 802.11g : diversity Antenna but only one active mode, this port is Ant-1
- * 802.11n_HT20 : MIMO mode, this port is MIMO
- * 802.11ax_HE20 : MIMO mode, this port is MIMO

Directional gain calculation & Conducted Output Power limit after correction :

- * 802.11b : Gain = 2.87 dBi $\leq$ 6dBi ;
- * 802.11g : Gain = 2.87 dBi $\leq$ 6dBi ;
- * 802.11n_HT20 : Directional Gain = $10 \cdot \log\{[10^{(G1/20)} + 10^{(G2/20)} + \dots + 10^{(Gn/20)}]^2 / NANT\}$ = 5.88 dBi $\leq$ 6dBi ;
- * 802.11ax_HE20 : Directional Gain = $10 \cdot \log\{[10^{(G1/20)} + 10^{(G2/20)} + \dots + 10^{(Gn/20)}]^2 / NANT\}$ = 5.88 dBi $\leq$ 6dBi ;

Directional gain calculation & Power Spectral Density limit after correction :

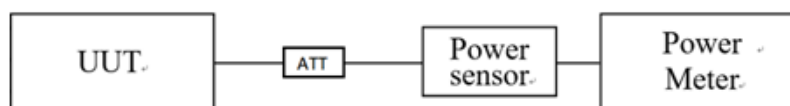
- * 802.11b : Gain = 2.87 dBi $\leq$ 6dBi ;
- * 802.11g : Gain = 2.87 dBi $\leq$ 6dBi ;
- * 802.11n_HT20 : Directional Gain = $10 \cdot \log\{[10^{(G1/20)} + 10^{(G2/20)} + \dots + 10^{(Gn/20)}]^2 / NANT\}$ = 5.88 dBi $\leq$ 6dBi ;
- * 802.11ax_HE20 : Directional Gain = $10 \cdot \log\{[10^{(G1/20)} + 10^{(G2/20)} + \dots + 10^{(Gn/20)}]^2 / NANT\}$ = 5.88 dBi $\leq$ 6dBi ;

2.2 Peak Output Power Measurement

2.2.1 Limit

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 1W. If transmitting antenna of directional gain greater than 6dBi is used, the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

2.2.2 Test Setup



2.2.3 Test Procedure

1. Reference ANSI C63.10 : 2013 chapter 11.9.1.3
2. Enable the EUT transmit continuously.
3. Let EUT be connected to the power meter, and record the max. reading.
4. Measurement using a gated RF average power meter, since this measurement is made only during the ON time of the transmitter, no duty cycle correction is required.

2.2.4 Test Result

Mode	Channel	Frequency (MHz)	Peak power (dBm)			Limit (dBm)	Result
			Chain A	Chain B	Total		
802.11b	1	2412	23.41	--	--	≤ 30	Pass
	6	2437	23.32	--	--	≤ 30	Pass
	11	2462	22.96	--	--	≤ 30	Pass
802.11g	1	2412	24.05	23.44	--	≤ 30	Pass
	6	2437	25.73	25.32	--	≤ 30	Pass
	11	2462	23.56	23.16	--	≤ 30	Pass
802.11n HT20	1	2412	22.45	20.51	24.60	≤ 30	Pass
	6	2437	24.50	24.31	27.42	≤ 30	Pass
	11	2462	22.29	21.45	24.90	≤ 30	Pass
802.11ax HE20	1	2412	22.75	20.62	24.82	≤ 30	Pass
	6	2437	24.71	24.15	27.45	≤ 30	Pass
	11	2462	22.26	20.29	24.40	≤ 30	Pass

Remark:

1. Peak Power = Reading value on power meter + cable loss
2. $10 \log(X/\text{mW}) = \text{dBm}$, $X=1$ watt (Limit)
1 watt = 30 dBm

2.3 6dB Bandwidth Measurement

2.3.1 Limit

The minimum 6 dB bandwidth shall be at least 500 kHz.

2.3.2 Test Setup



2.3.3 Test Procedure

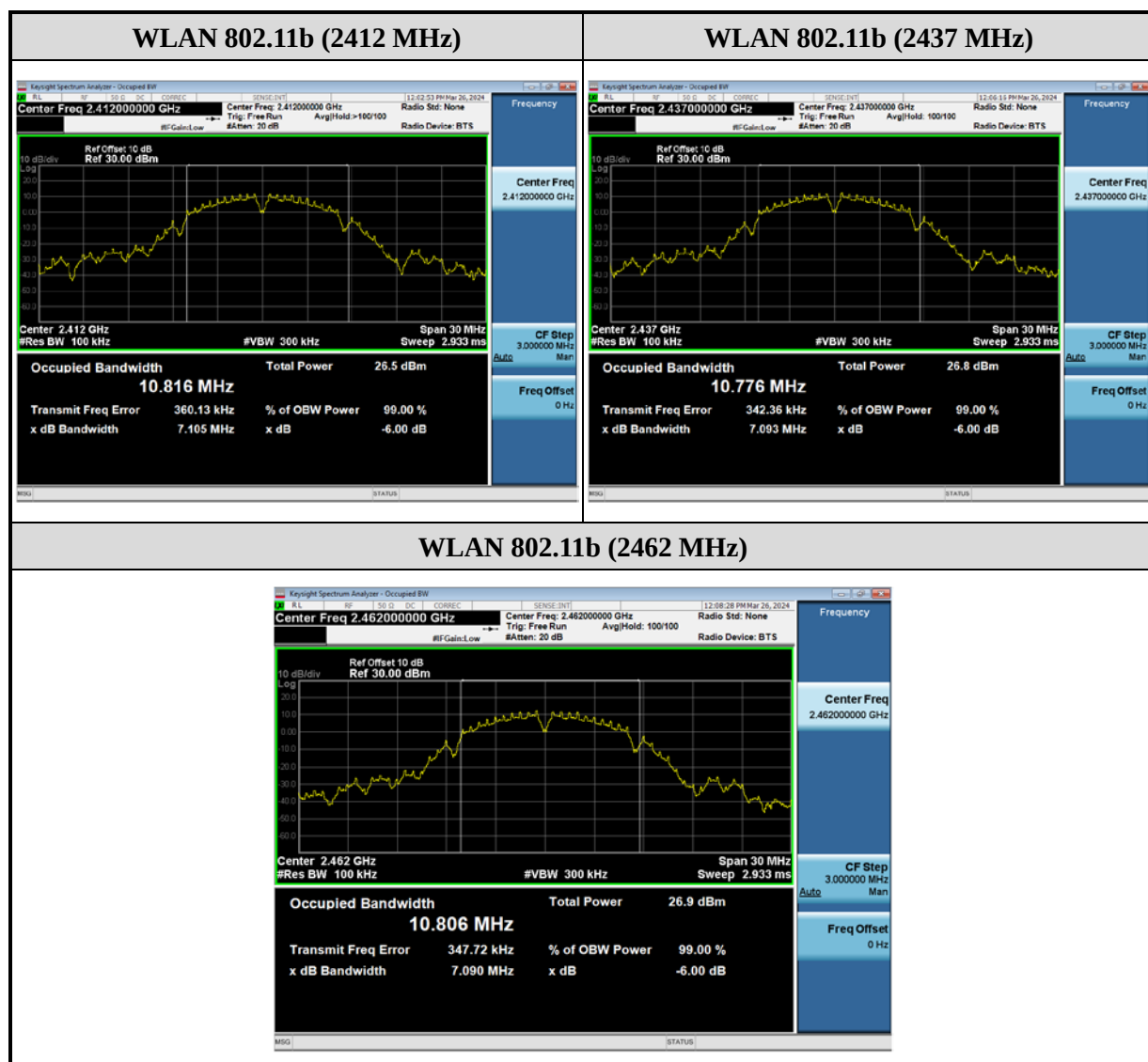
1. Reference ANSI C63.10 : 2013 chapter 11.8.2
2. Enable the EUT transmit continuously.
3. Spectrum analyzer set:
 - a) RBW = 100 kHz
 - b) VBW $\geq$ 3 RBW
 - c) Detector = peak
 - d) Sweep time = auto couple
 - e) Trace mode = max hold.

2.3.4 Test Result

802.11b

Channel	Frequency (MHz)	6dB BW (kHz)		Limit (kHz)	Result
		Chain A	Chain B		
1	2412	7105	--	≥ 500	Pass
6	2437	7093	--	≥ 500	Pass
11	2462	7090	--	≥ 500	Pass

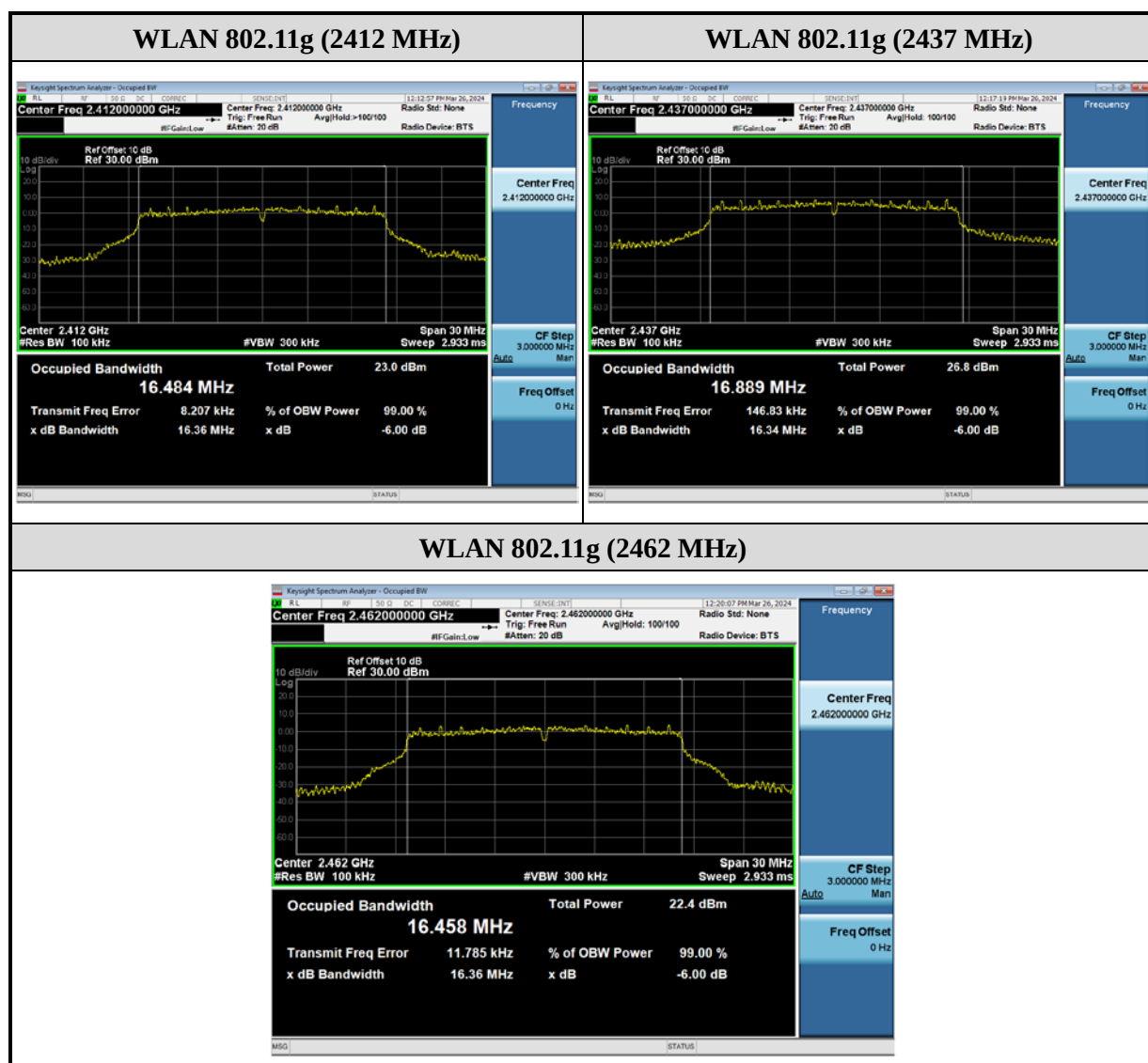
Chain A



802.11g

Channel	Frequency (MHz)	6dB BW (kHz)		Limit (kHz)	Result
		Chain A	Chain B		
1	2412	16360	--	≥ 500	Pass
6	2437	16340	--	≥ 500	Pass
11	2462	16360	--	≥ 500	Pass

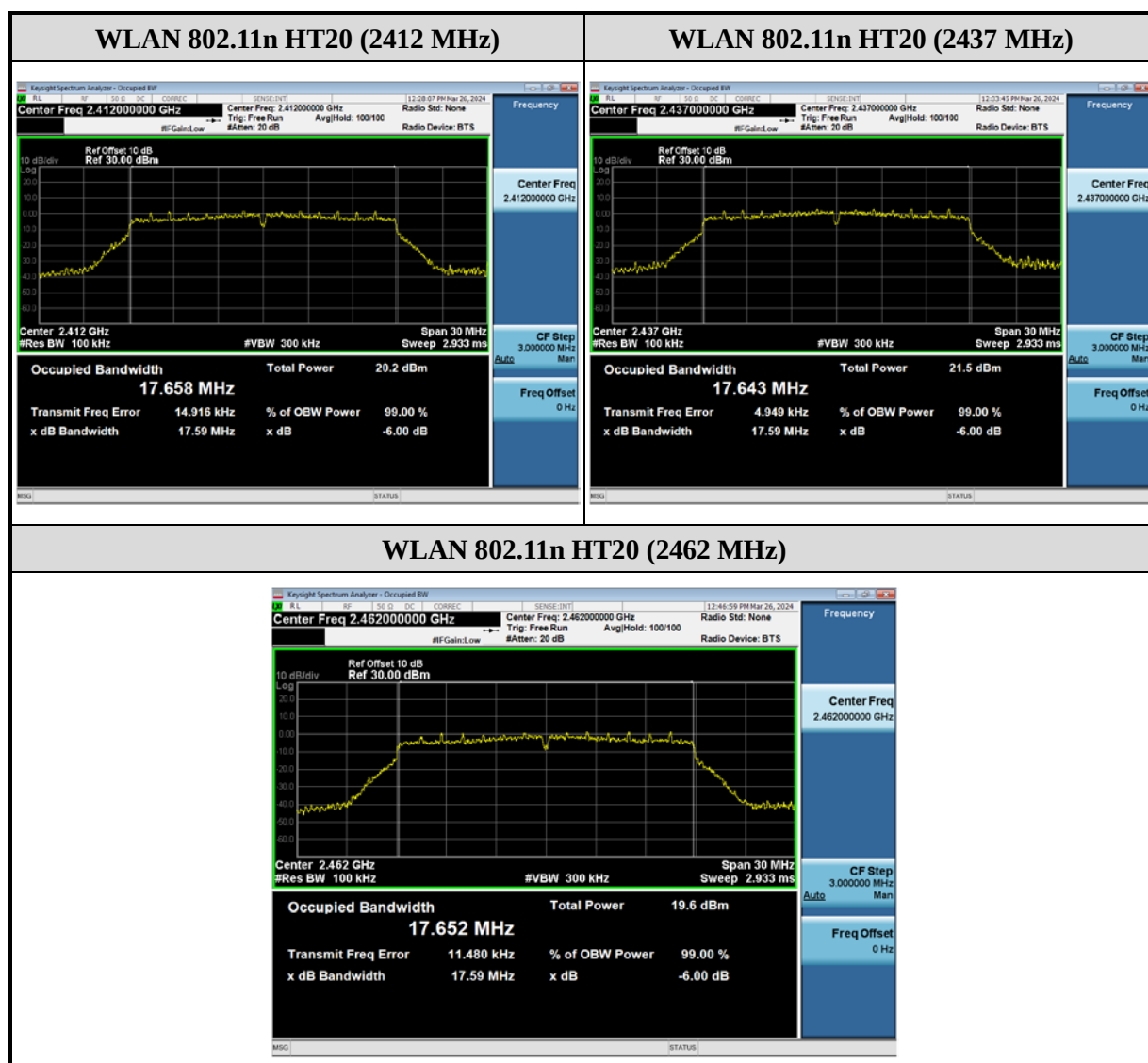
Chain A



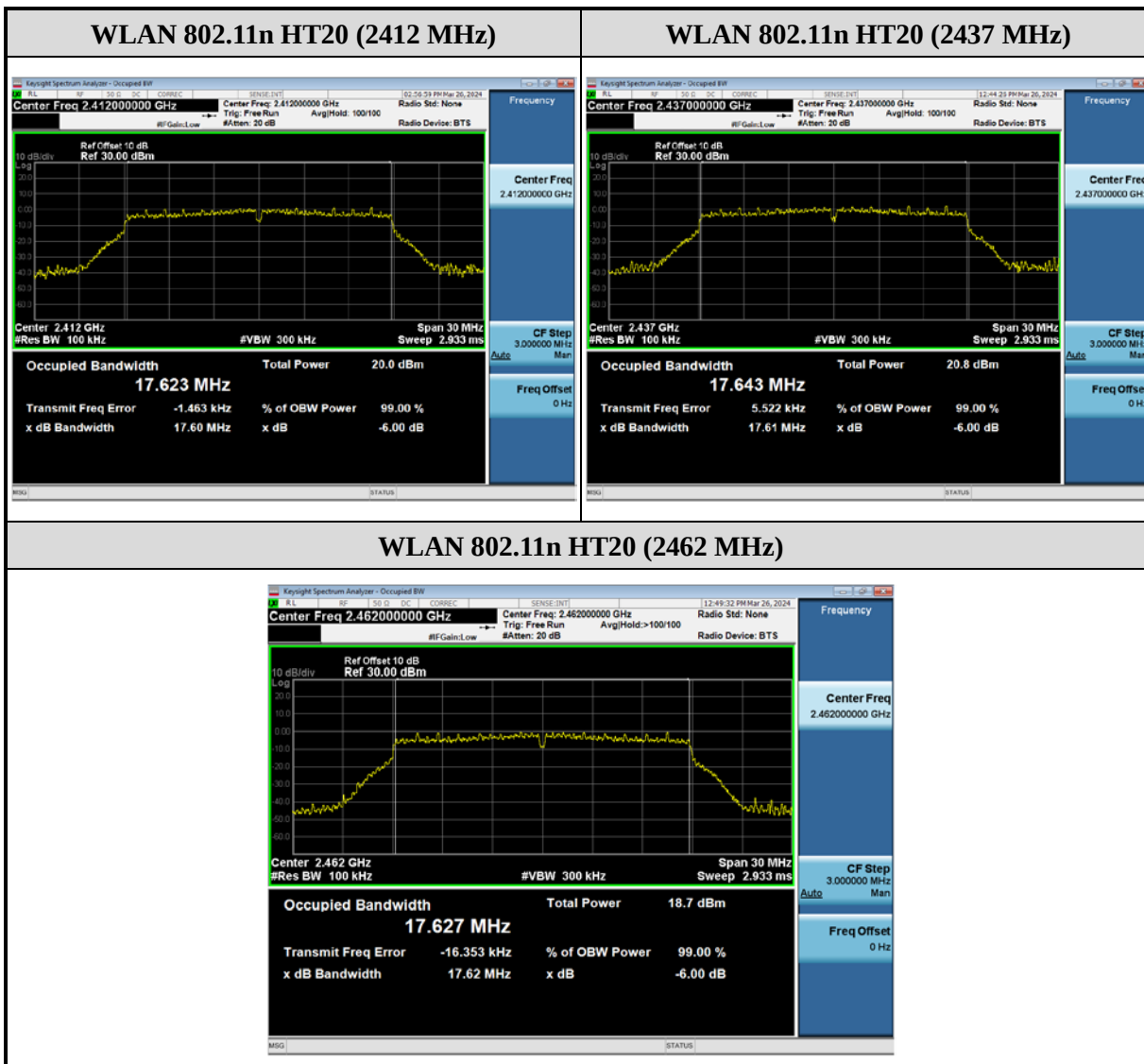
802.11n HT20

Channel	Frequency (MHz)	6dB BW (kHz)		Limit (kHz)	Result
		Chain A	Chain B		
1	2412	17590	17600	≥ 500	Pass
6	2437	17590	17610	≥ 500	Pass
11	2462	17590	17620	≥ 500	Pass

Chain A



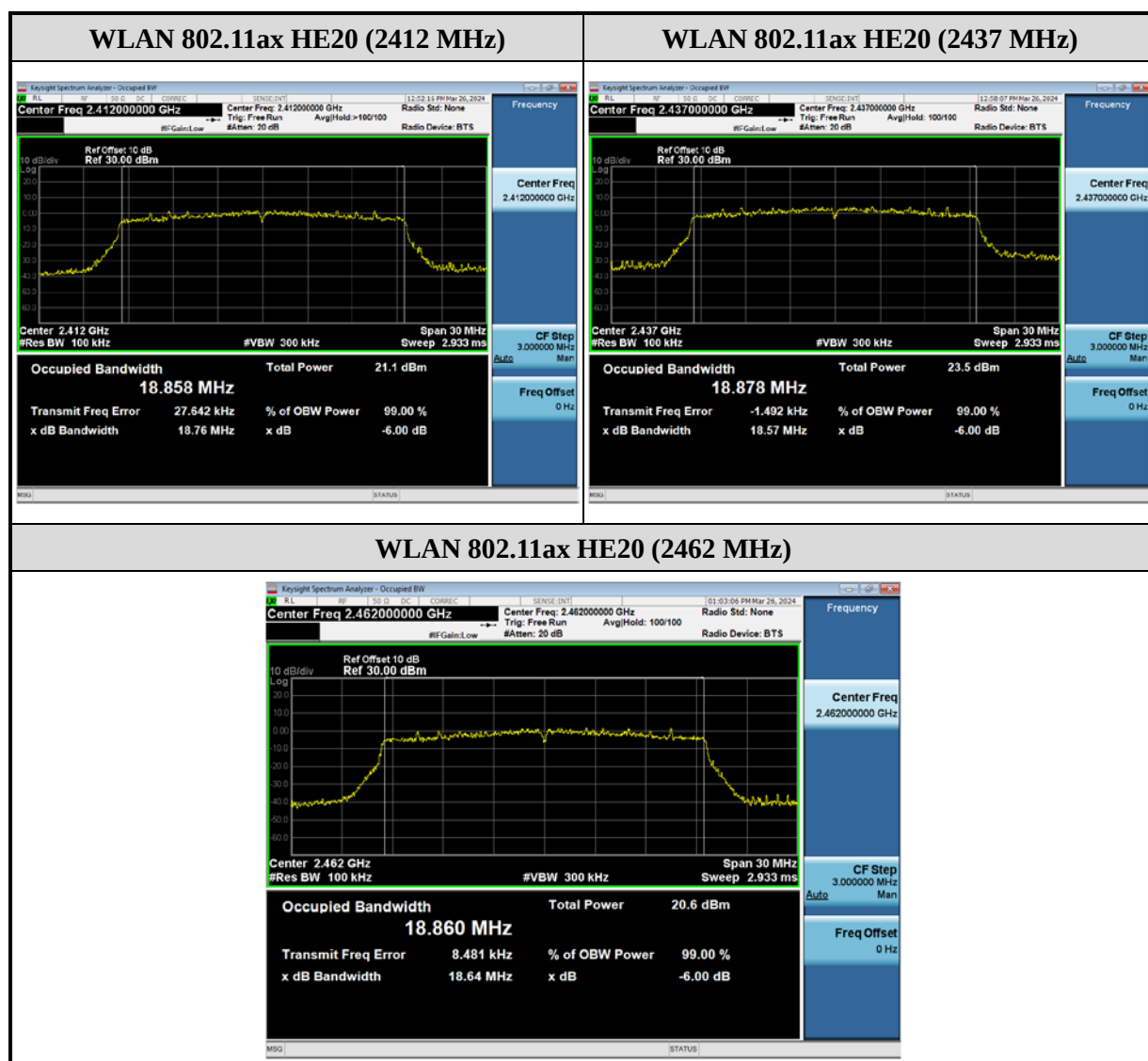
Chain B



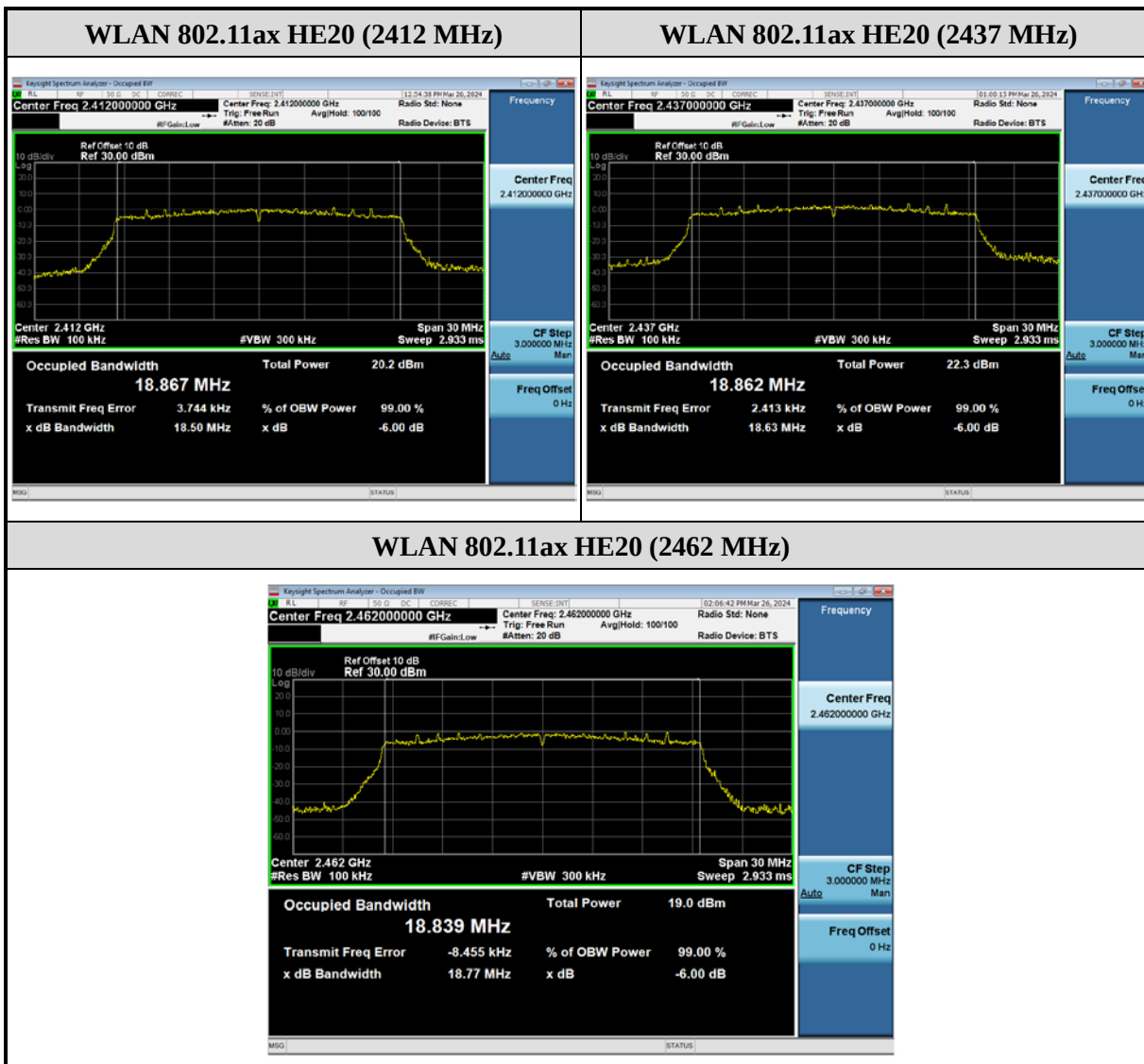
802.11ax HE20

Channel	Frequency (MHz)	6dB BW (kHz)		Limit (kHz)	Result
		Chain A	Chain B		
1	2412	18760	18500	≥ 500	Pass
6	2437	18570	18630	≥ 500	Pass
11	2462	18640	18770	≥ 500	Pass

Chain A



Chain B



2.4 Power Spectral Density Measurement

2.4.1 Limit

The peak power spectral density shall not be greater than 8dBm in any 3kHz band at any time interval of continuous transmission.

2.4.2 Test Setup



2.4.3 Test Procedure

1. Reference ANSI C63.10 : 2013 chapter 11.10.2
2. Enable the EUT transmit continuously.
3. Spectrum analyzer set:
 - a) RBW = 3 kHz ~ 100 kHz
 - b) VBW $\geq$ 3 RBW
 - c) Span = 1.5 times DTS Channel 6dB Bandwidth
 - d) Detector = peak
 - e) Sweep time = auto couple
 - f) Trace mode = max hold.

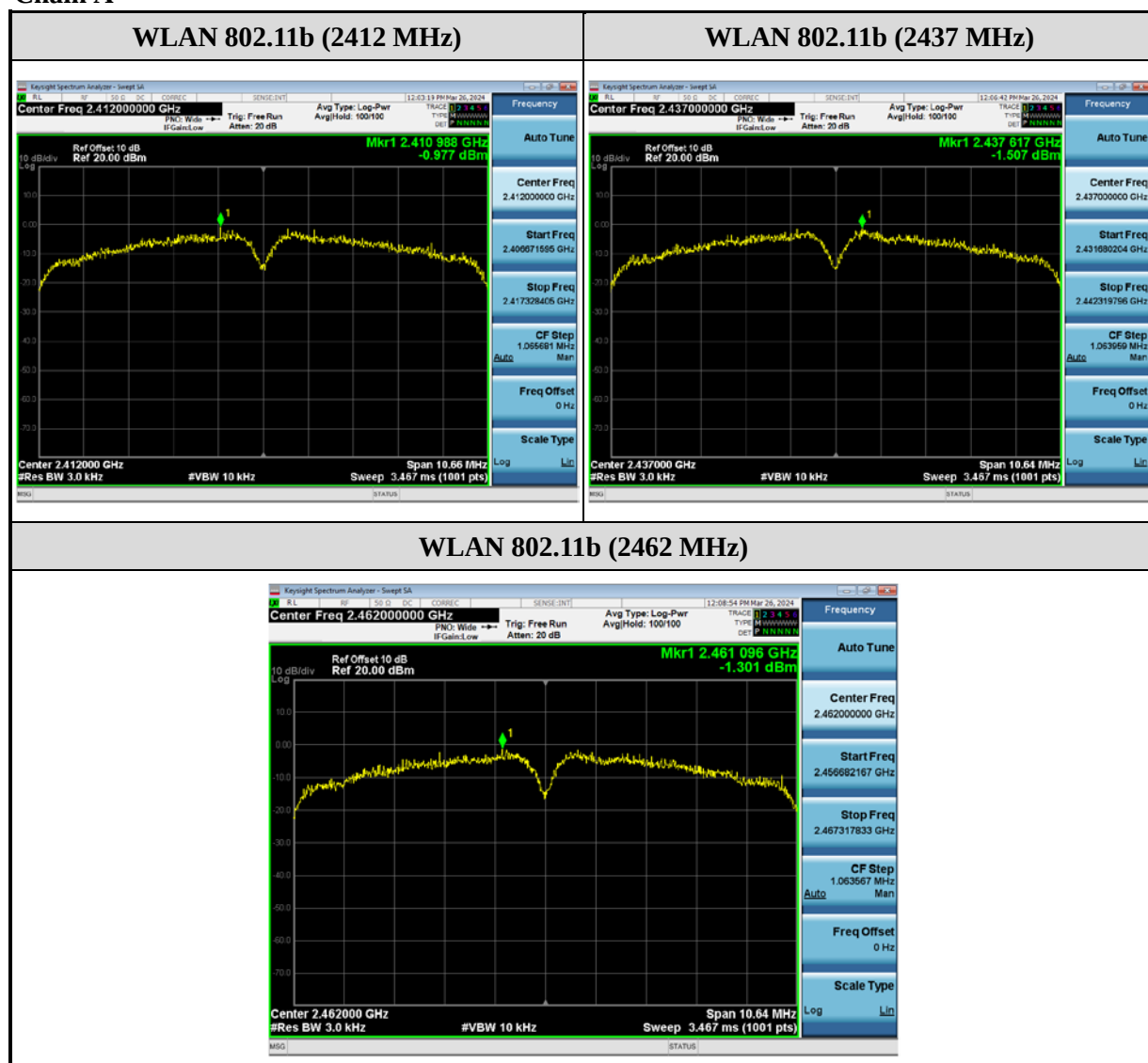
2.4.4 Test Result

802.11b

Channel	Frequency (MHz)	PSD (dBm)			Limit (dBm)	Result
		Chain A	Chain B	Total		
1	2412	-0.977	--	--	≤ 8	Pass
6	2437	-1.507	--	--	≤ 8	Pass
11	2462	-1.301	--	--	≤ 8	Pass

Remark: PSD = Reading value on spectrum analyzer + cable loss

Chain A

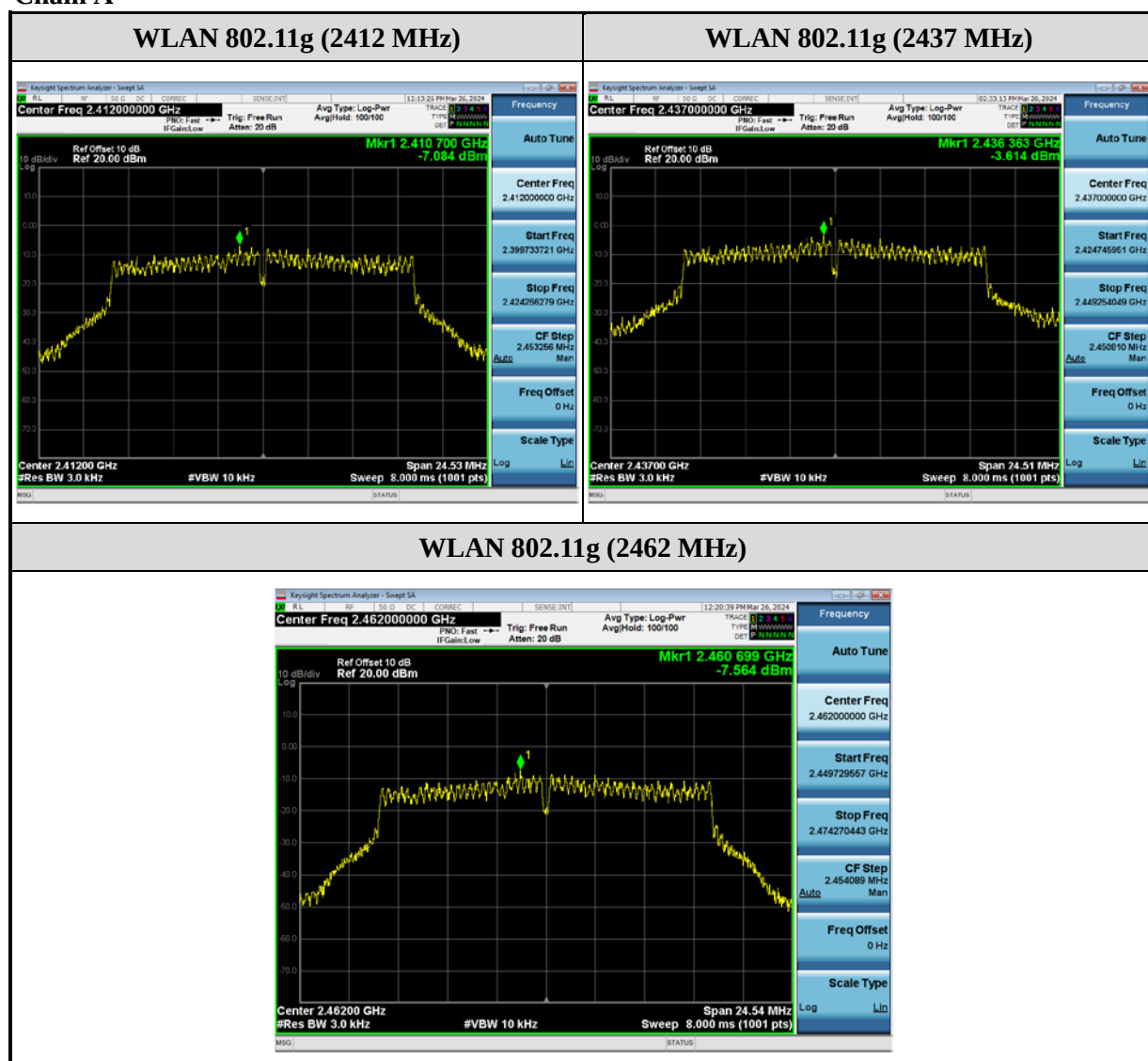


802.11g

Channel	Frequency (MHz)	PSD (dBm)			Limit (dBm)	Result
		Chain A	Chain B	Total		
1	2412	-7.084	--	--	≤ 8	Pass
6	2437	-3.614	--	--	≤ 8	Pass
11	2462	-7.564	--	--	≤ 8	Pass

Remark: PSD = Reading value on spectrum analyzer + cable loss

Chain A



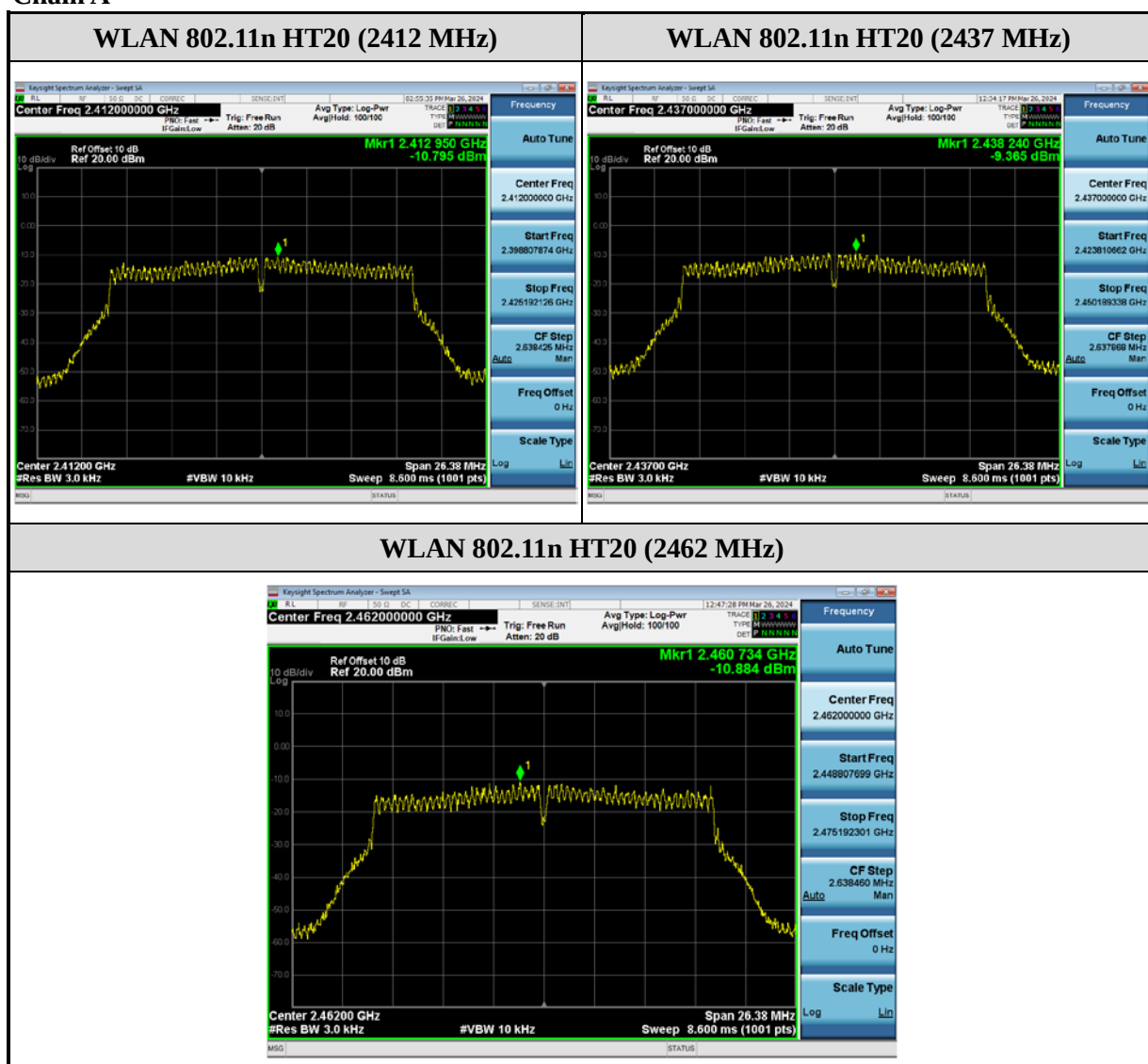
802.11n HT20

Channel	Frequency (MHz)	PSD (dBm)			Limit (dBm)	Result
		Chain A	Chain B	Total		
1	2412	-10.795	-10.672	-7.723	≤ 8	Pass
6	2437	-9.365	-9.391	-6.368	≤ 8	Pass
11	2462	-10.884	-12.345	-8.543	≤ 8	Pass

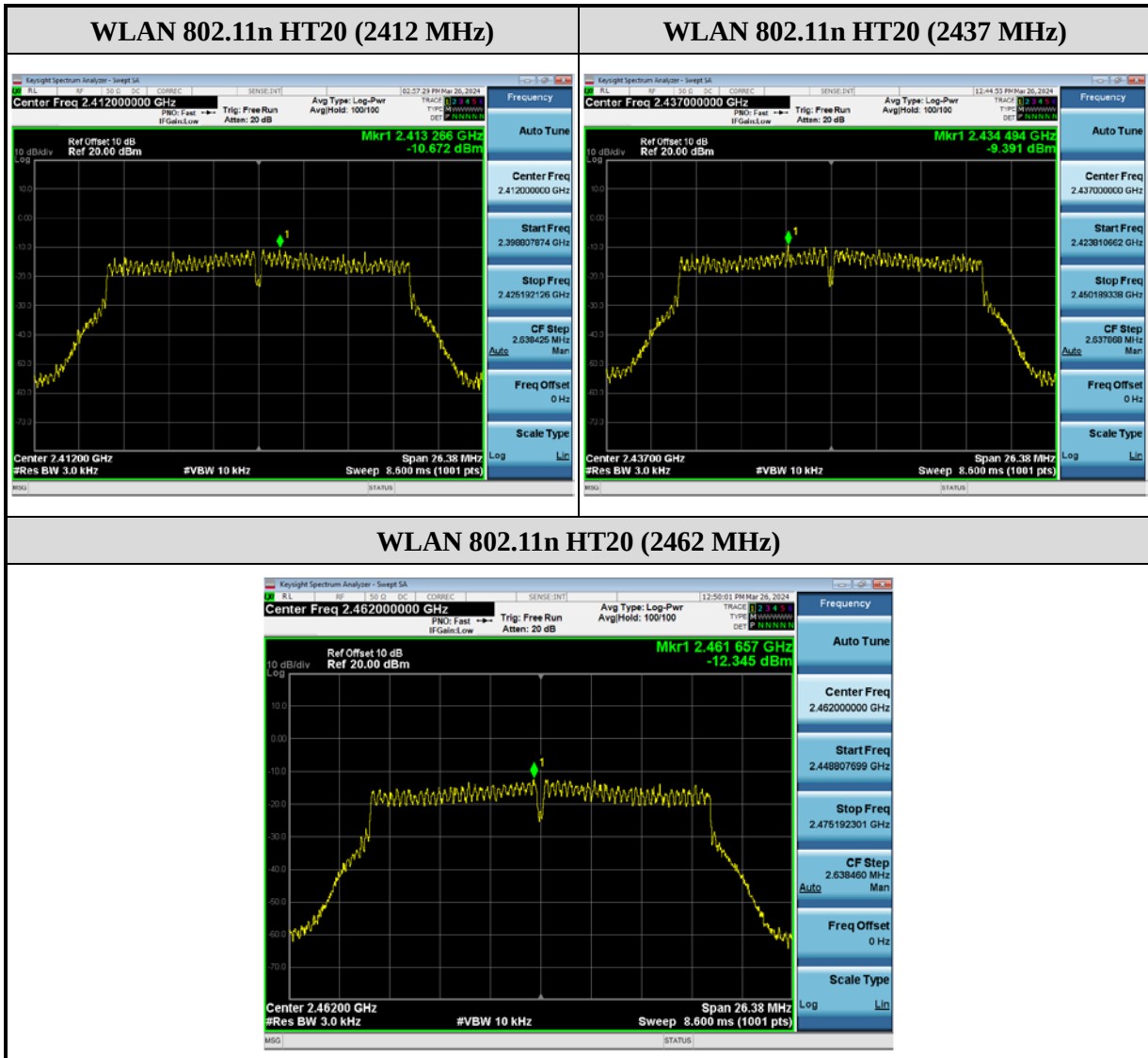
Remark:

1. PSD = Reading value on spectrum analyzer + cable loss
2. Section E) method 2) b) of power density measurement of KDB 662911 is used for calculating total power density.

Chain A



Chain B



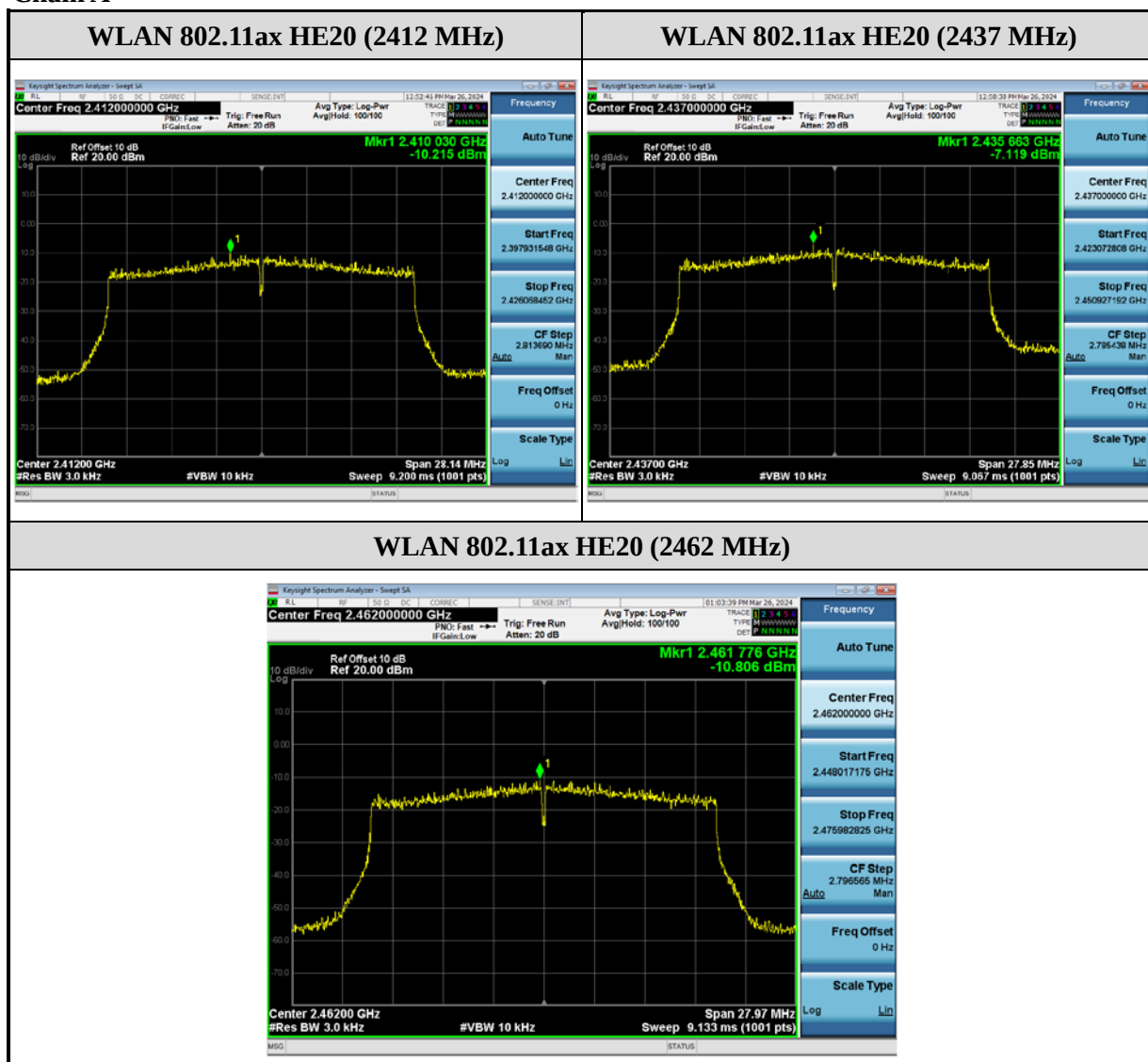
802.11ax HE20

Channel	Frequency (MHz)	PSD (dBm)			Limit (dBm)	Result
		Chain A	Chain B	Total		
1	2412	-10.215	-11.283	-7.706	≤ 8	Pass
6	2437	-7.119	-9.181	-5.018	≤ 8	Pass
11	2462	-10.806	-11.976	-8.341	≤ 8	Pass

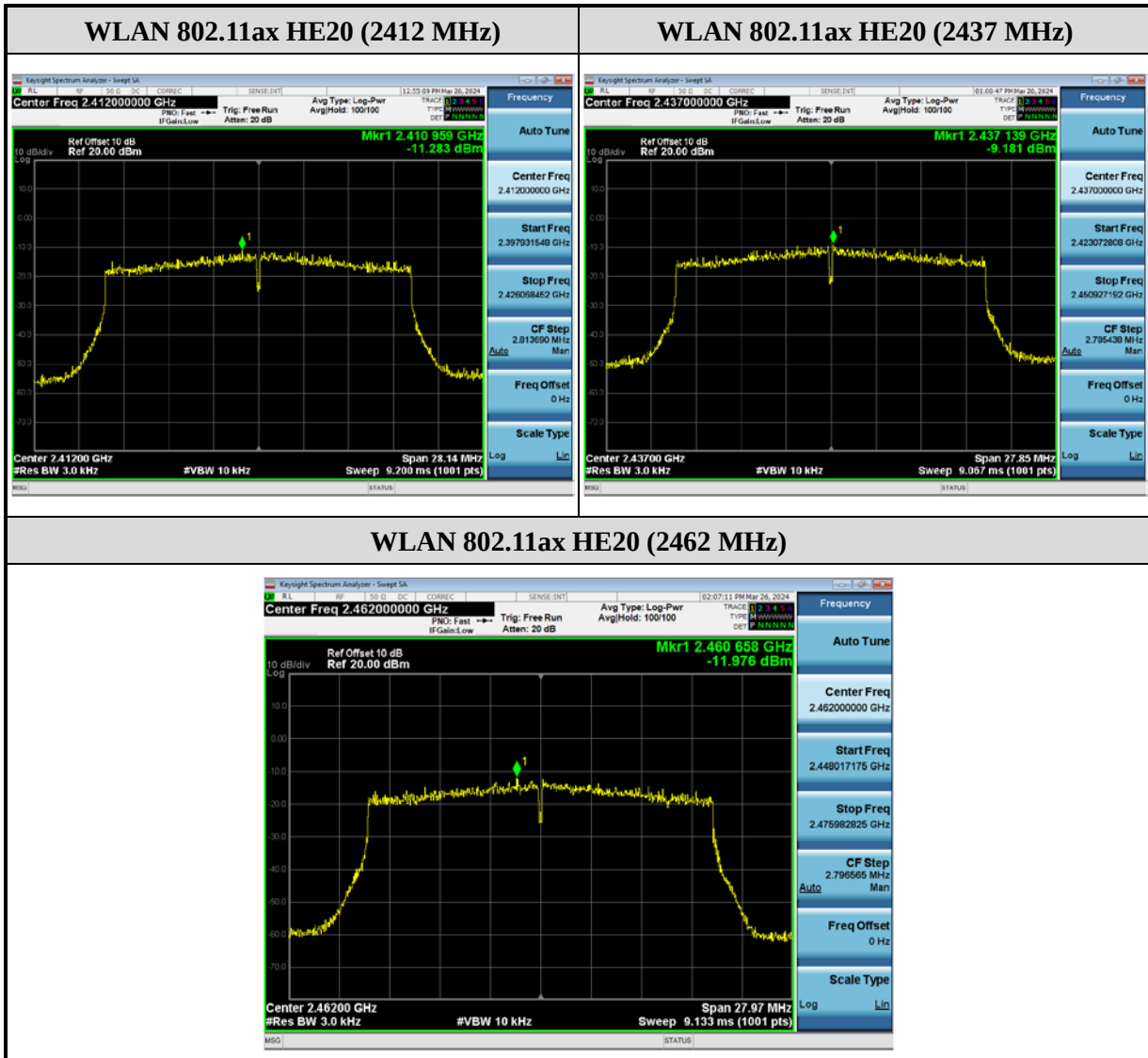
Remark:

- PSD = Reading value on spectrum analyzer + cable loss
- Section E) method 2) b) of power density measurement of KDB 662911 is used for calculating total power density.

Chain A



Chain B



2.5 Conducted Band Edges and Spurious Emission Measurement

2.5.1 Limit

In any 100 KHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100KHz bandwidth within the band that contains the highest level of the desired power, In addition, radiated emissions which fall in the restricted bands, as defined in must also comply with the radiated emission limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB

2.5.2 Test Setup

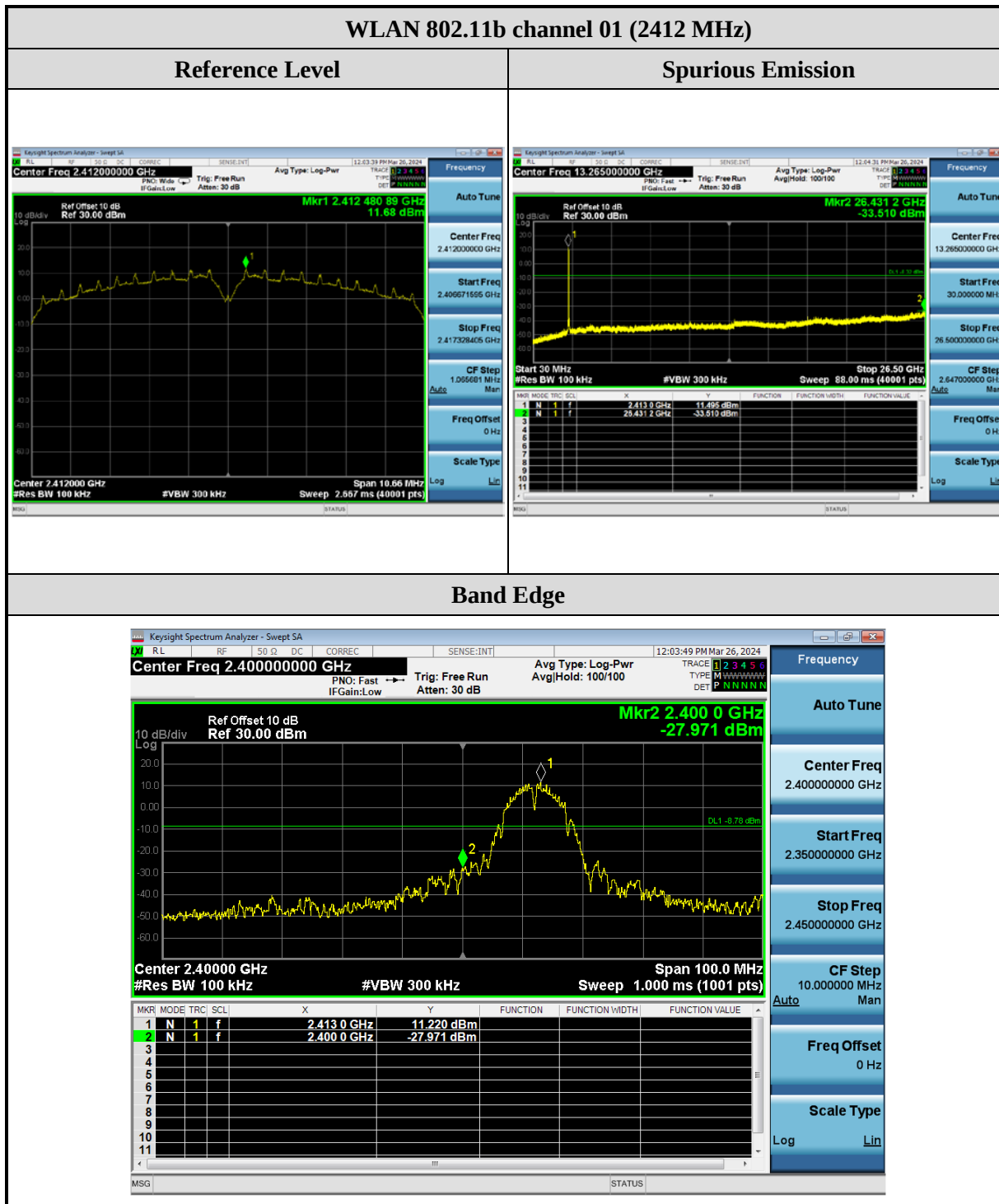


2.5.3 Test Procedure

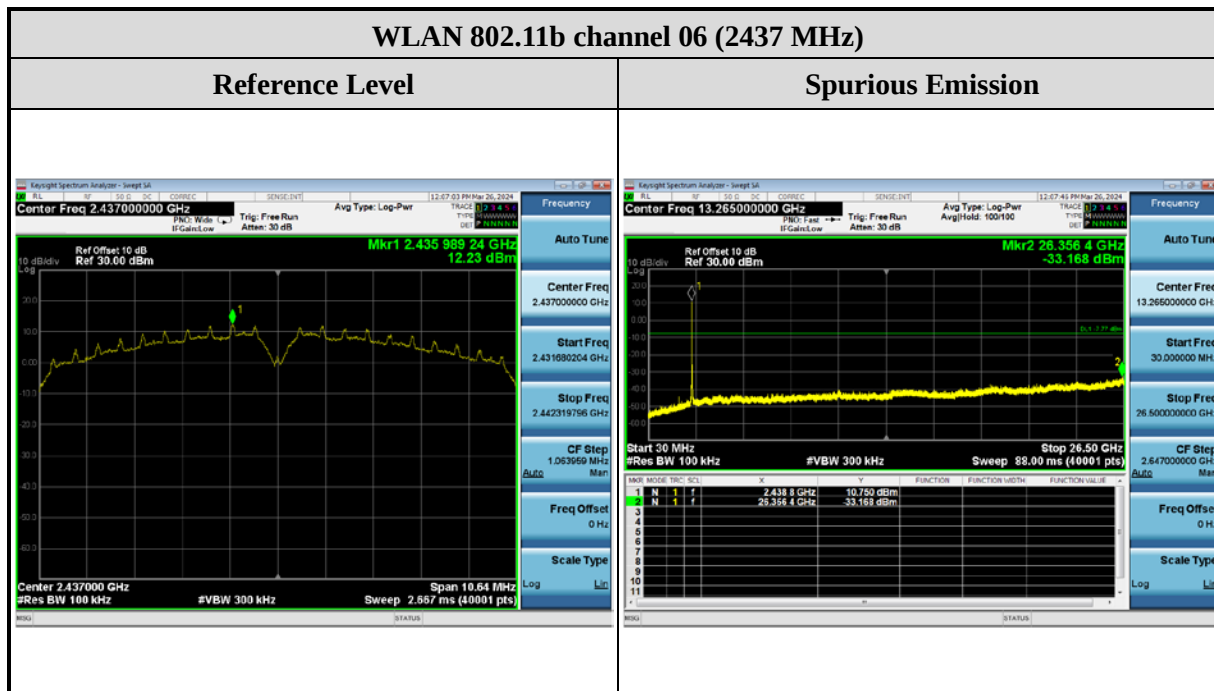
1. Reference ANSI C63.10 : 2013 chapter 6.10
2. Enable the EUT transmit continuously.
3. Spectrum analyzer set :
 - a) RBW = 100 kHz
 - b) VBW $\geq$ 3 RBW
 - c) Detector = peak
 - d) Sweep time = auto couple
 - e) Trace mode = max hold.

2.5.4 Test Result

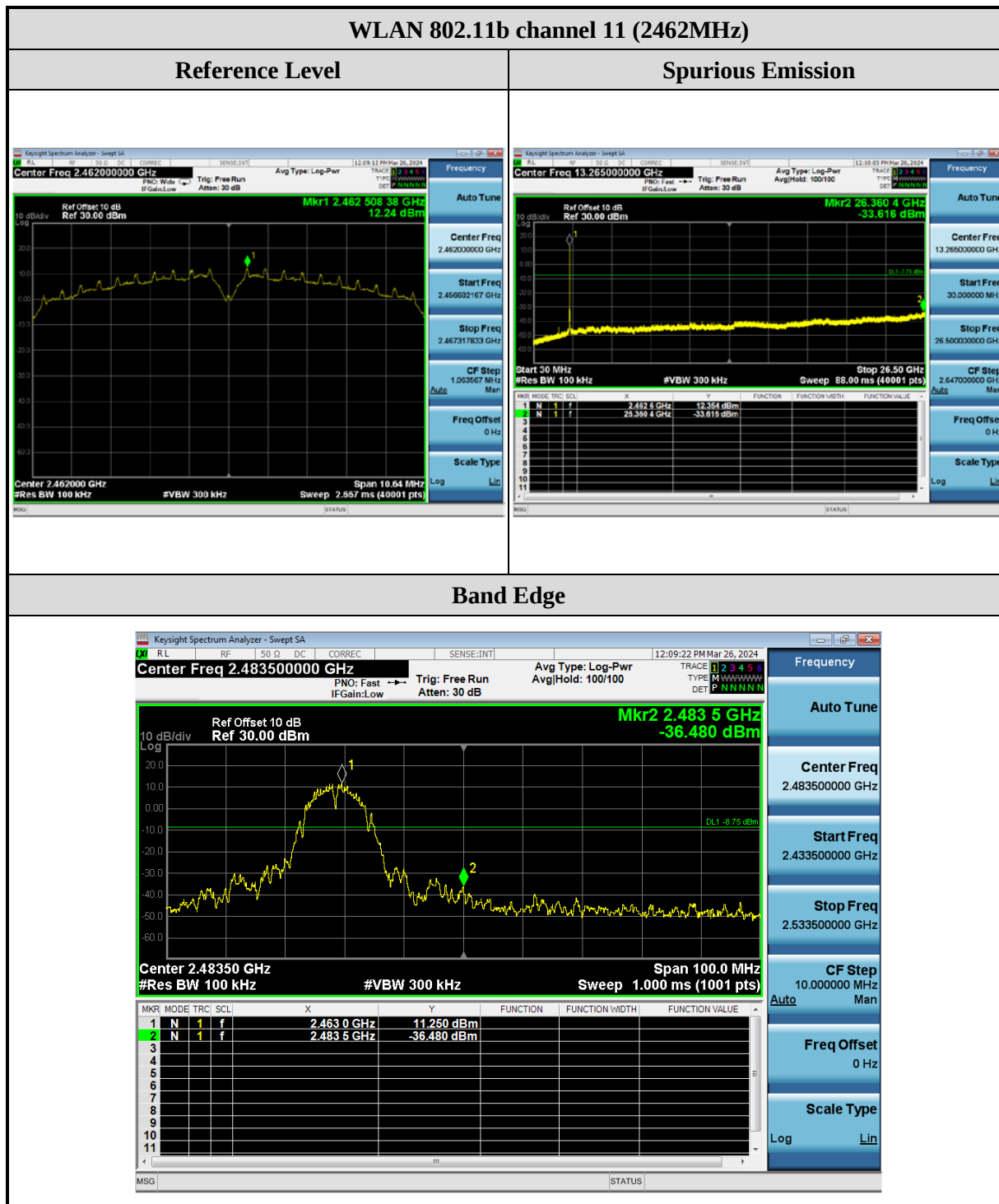
Chain A



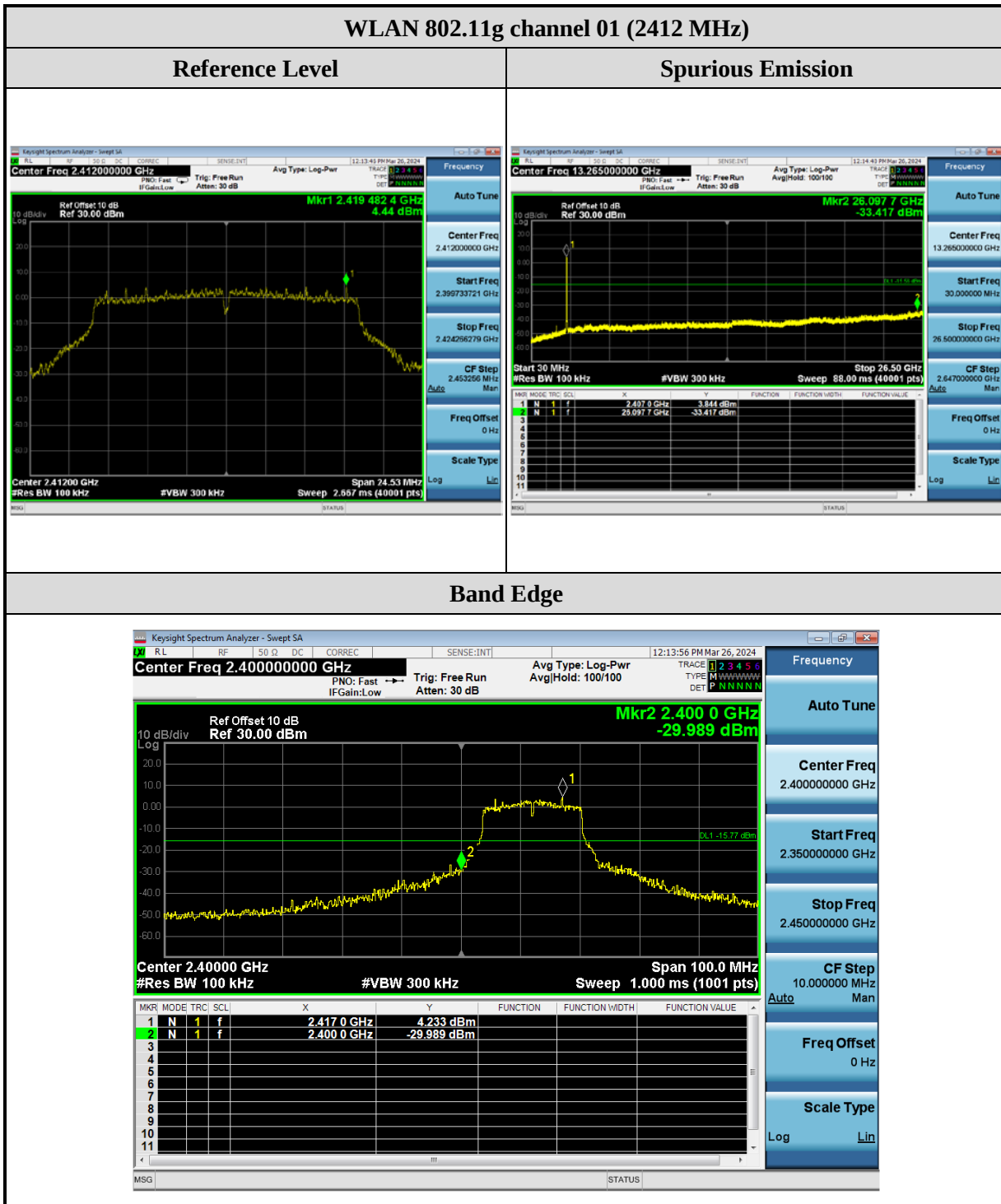
Chain A



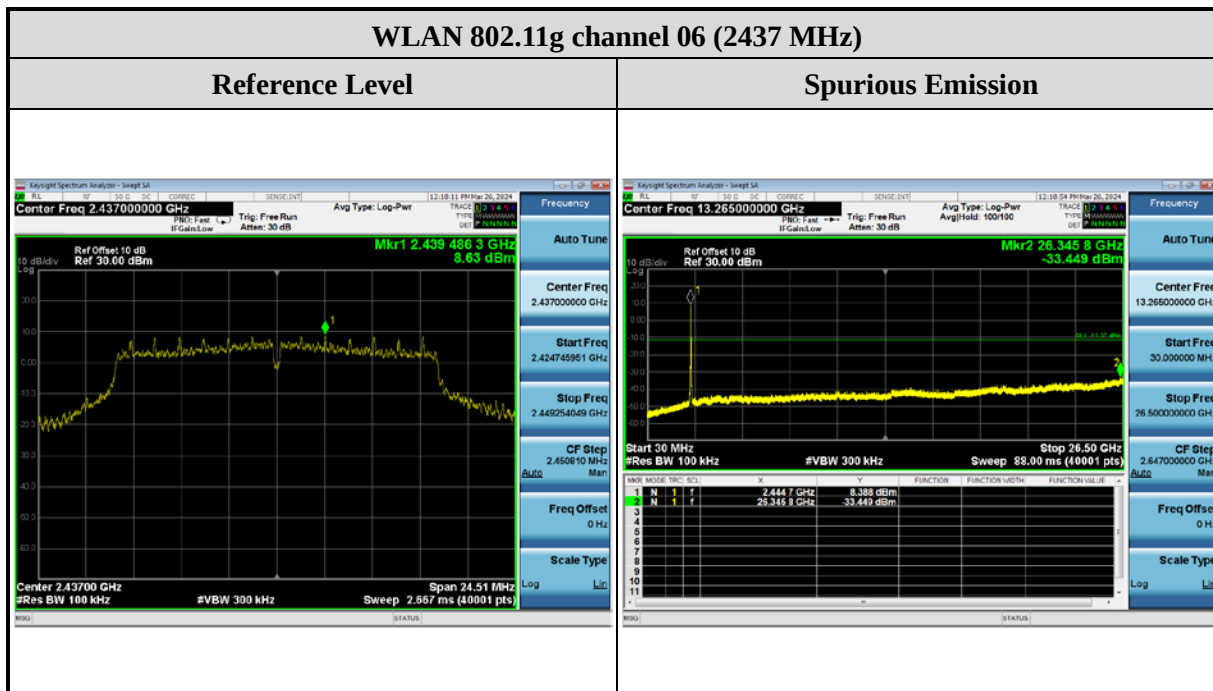
Chain A



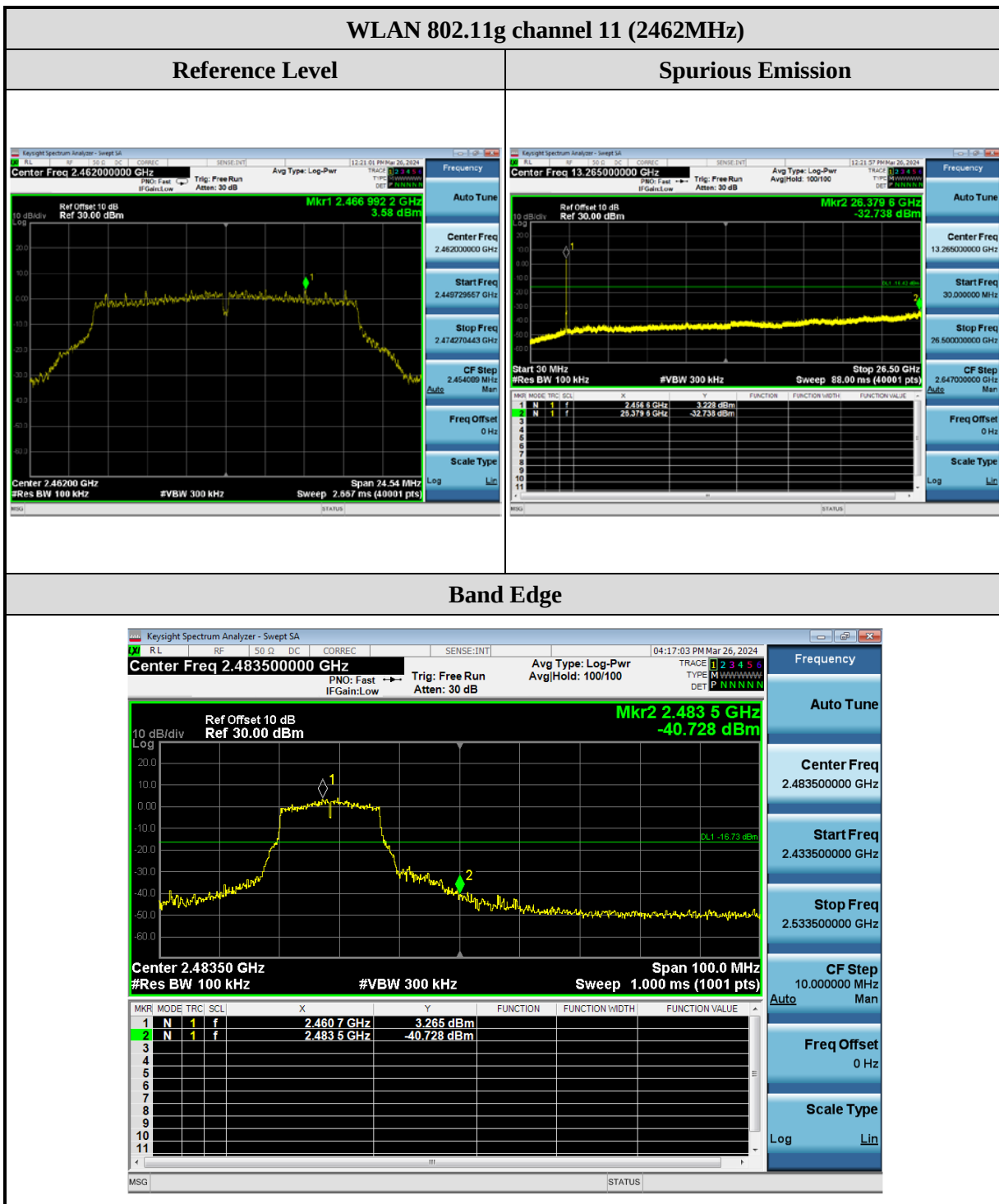
Chain A



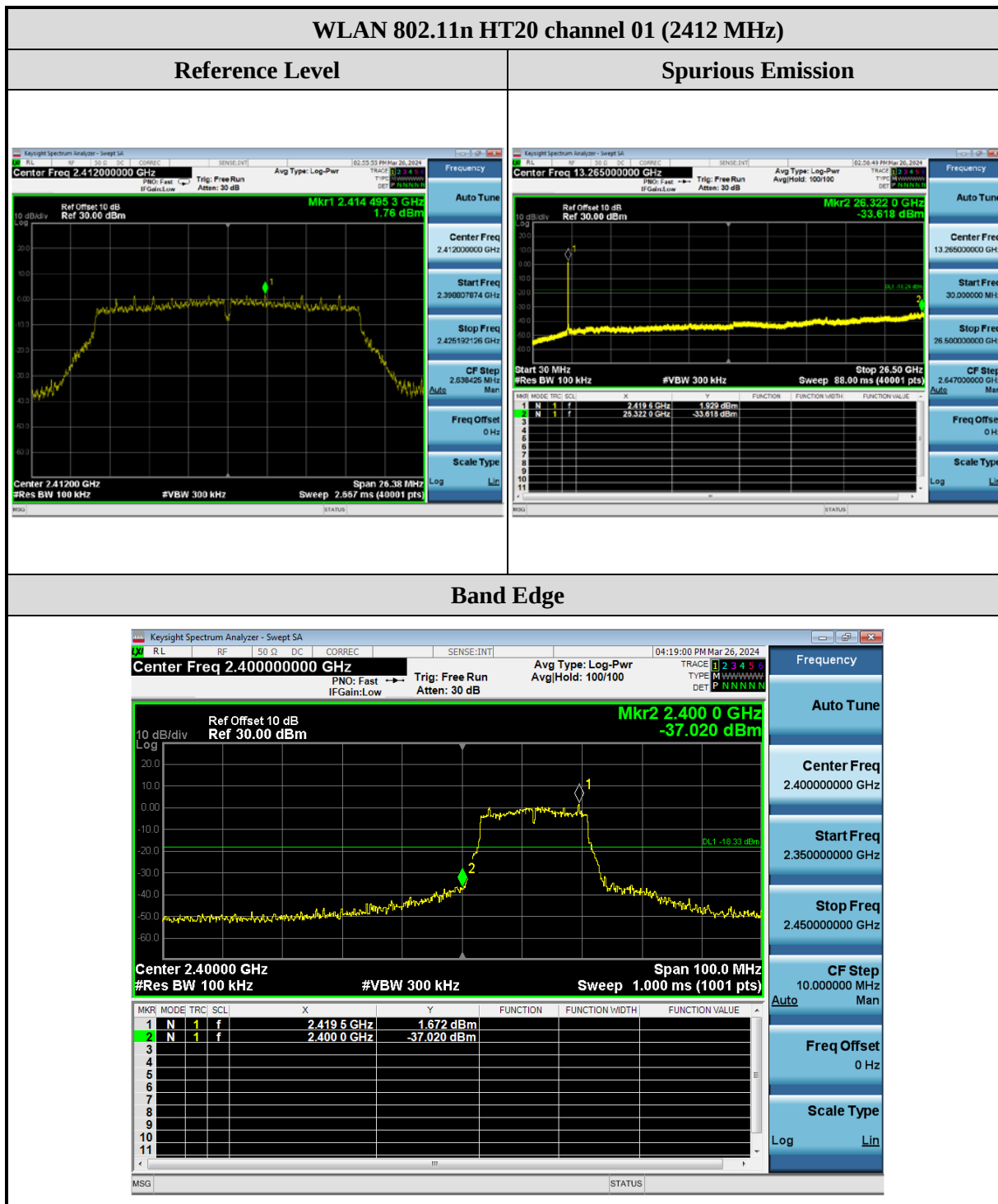
Chain A



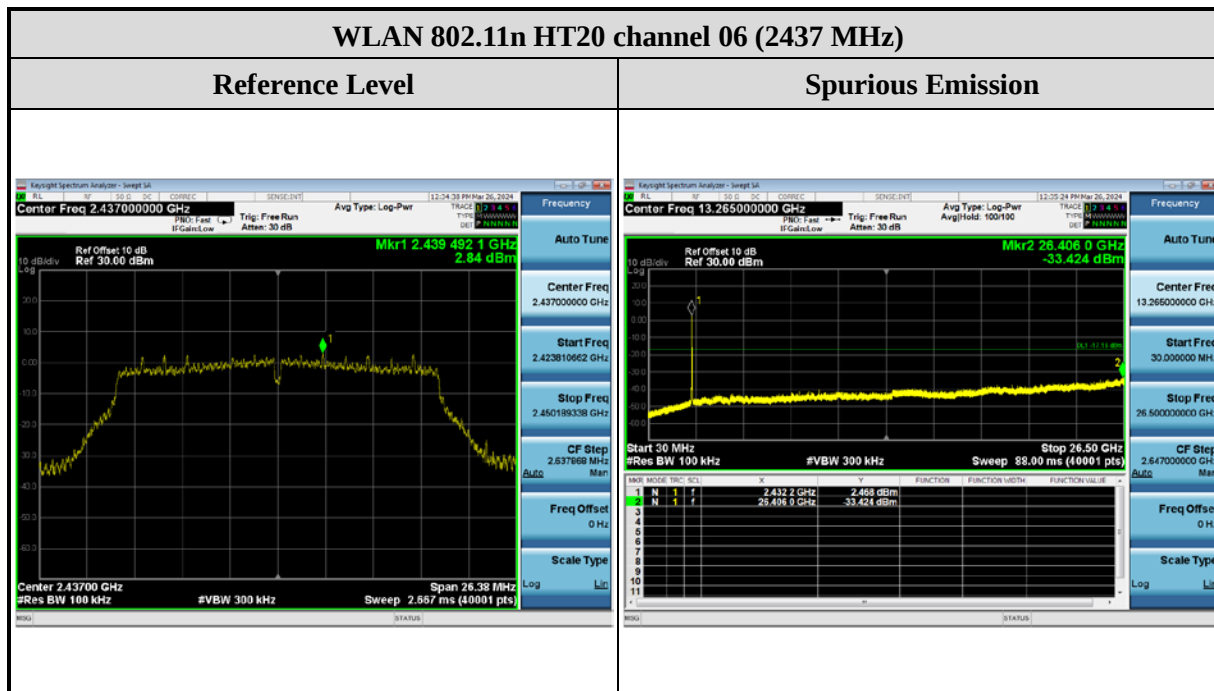
Chain A



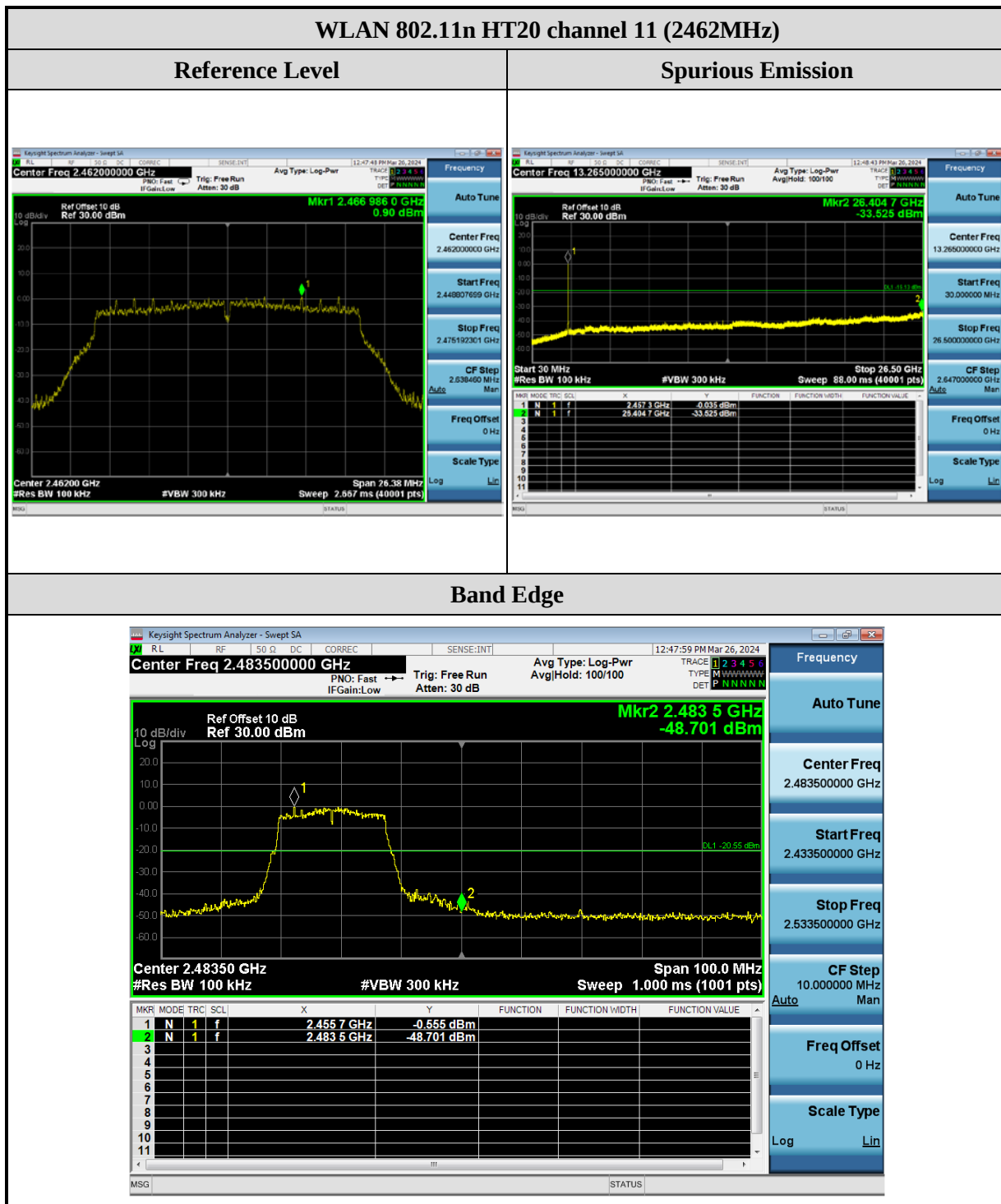
Chain A



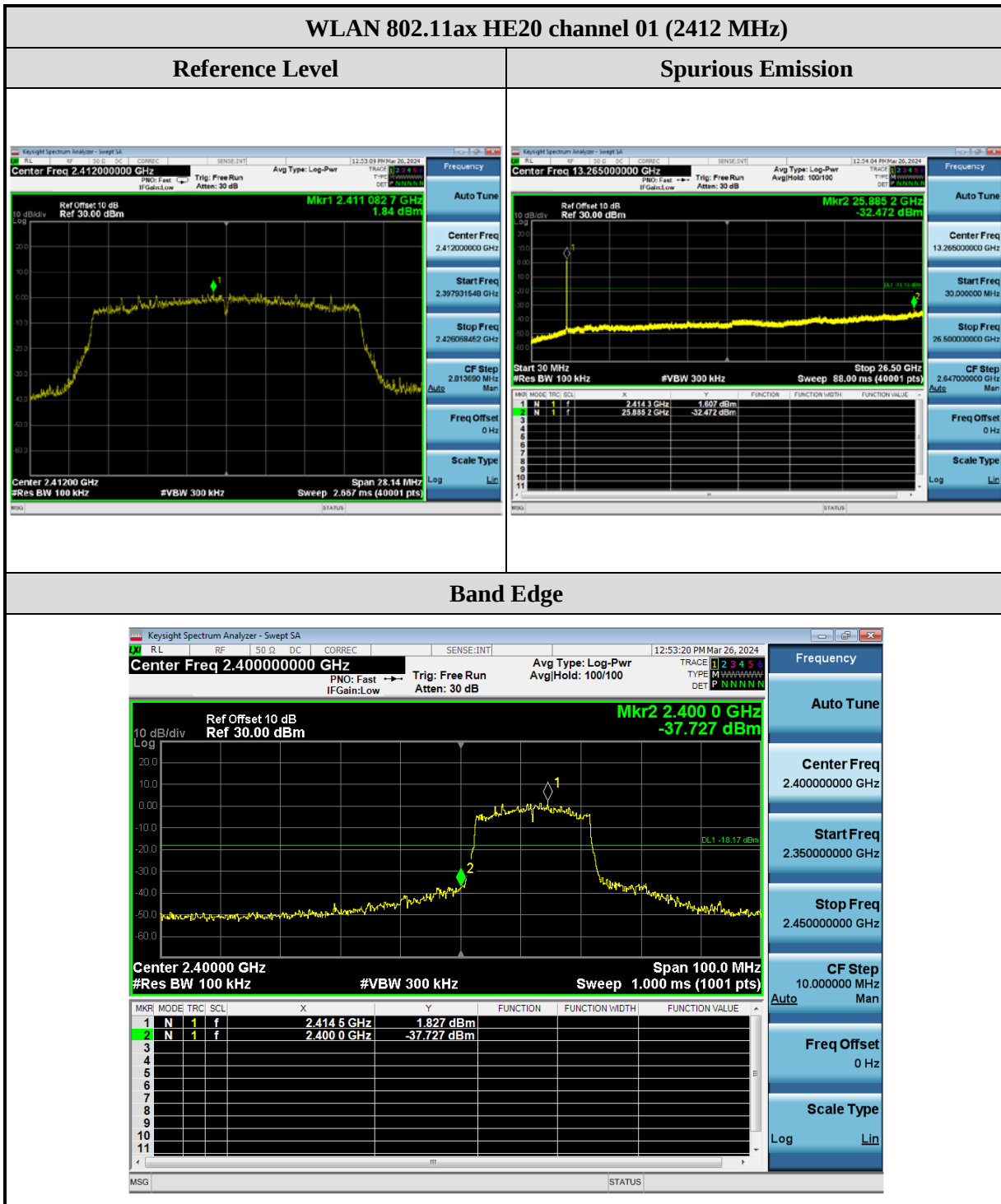
Chain A



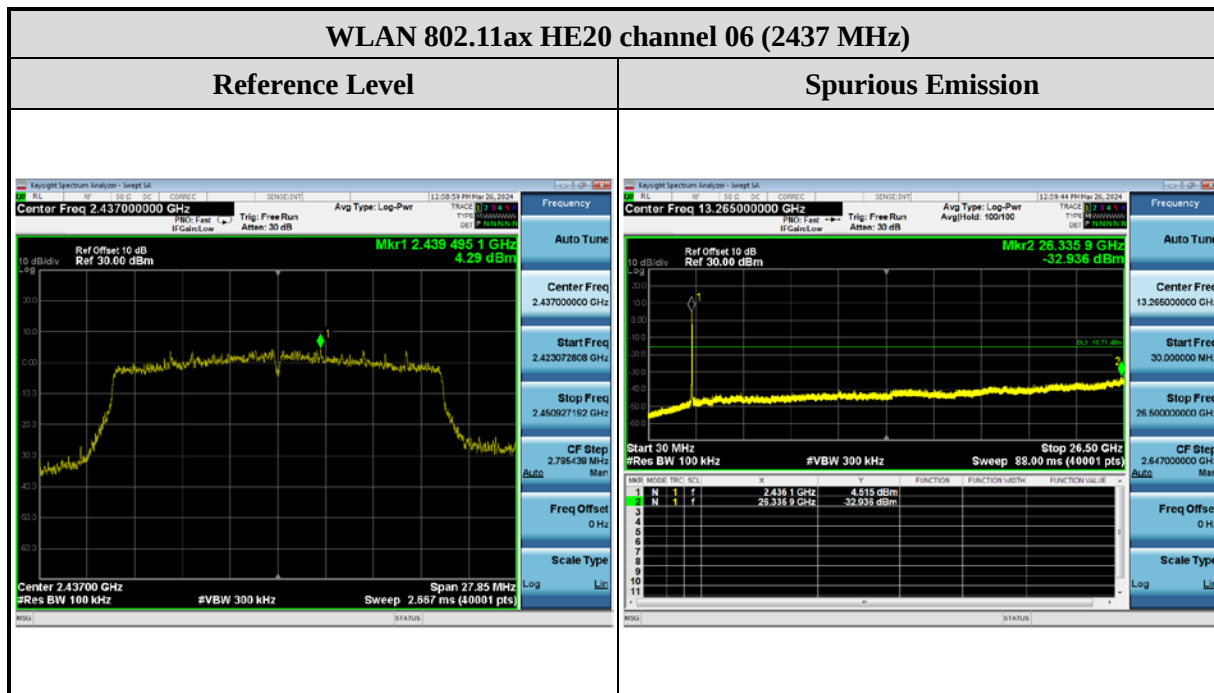
Chain A



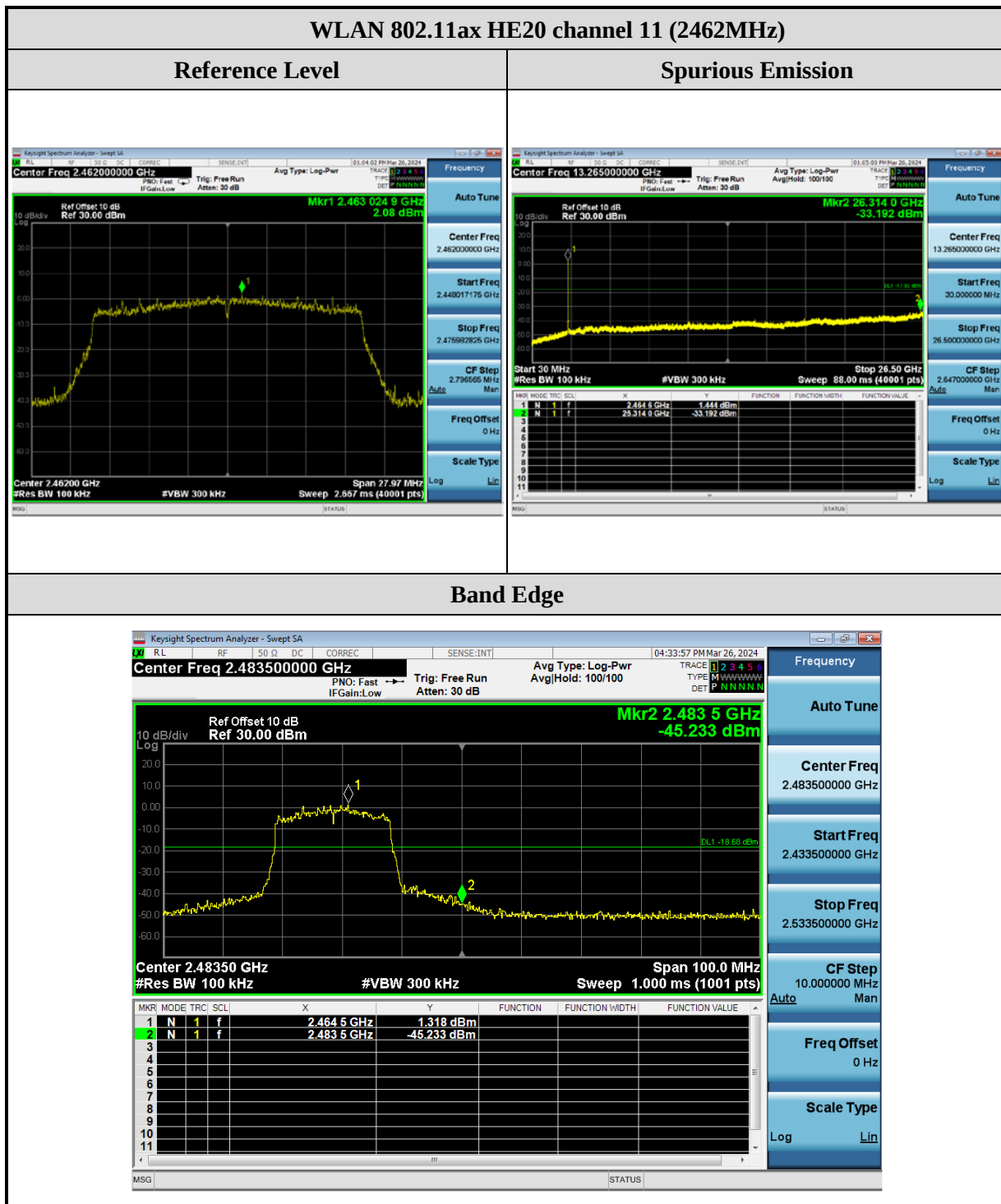
Chain A



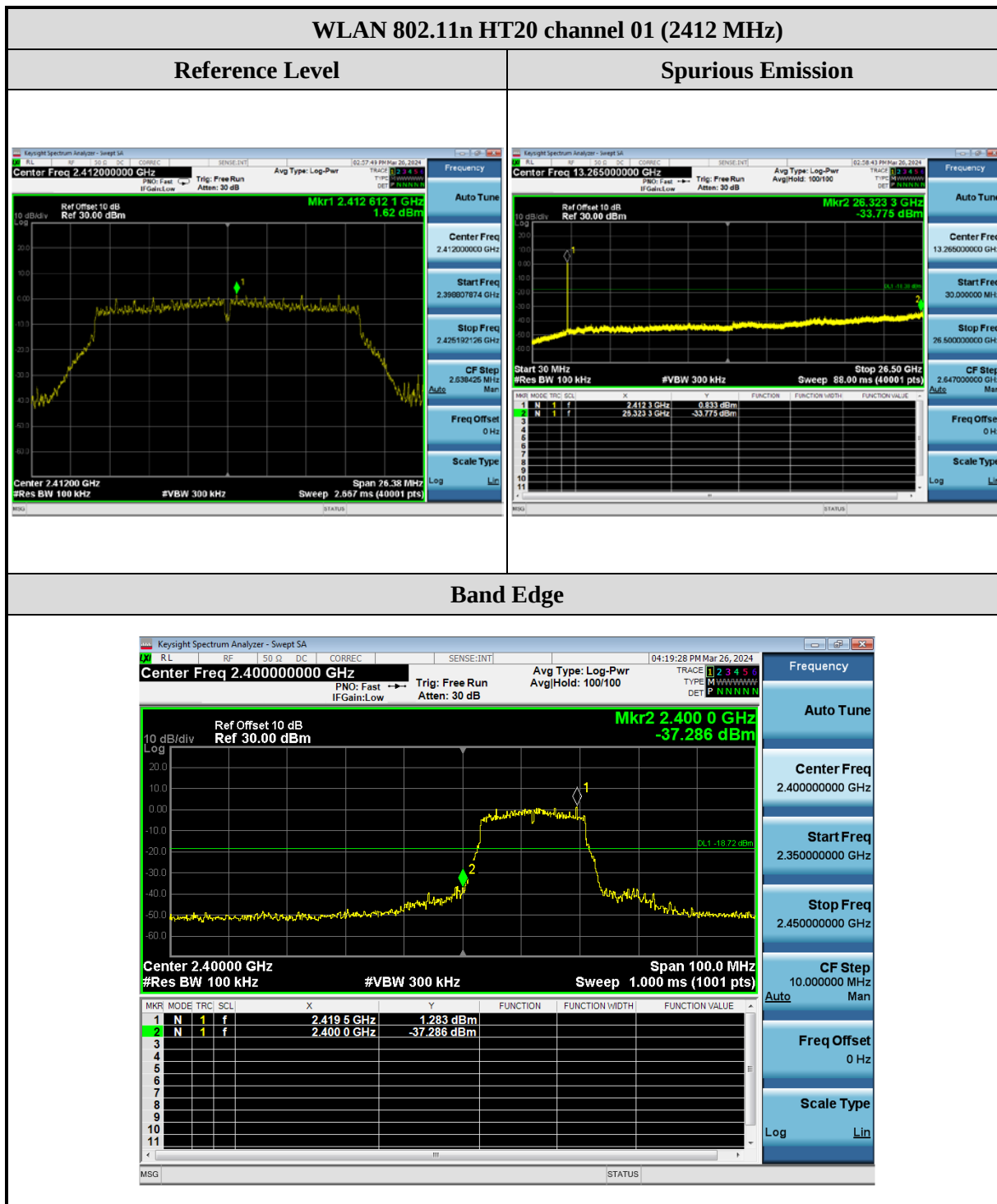
Chain A



Chain A



Chain B



Chain B

